The Builder.

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ILLUSTRATIONS.

New Buildings for the Eastern Telegraph Company, Limited.—Mr. John Belcher, A.R.A., Architect ..... *Extra Large Page Ink-Photo.*
National Telephone Head Offices, Victoria Embankment.—Mr. A. N. Bromley, F.R.I.B.A., Architect ..... *Double-Page Ink-Photo.*
South Lytchet Manor, Dorset.—Mr. W. D. Caröe, F.R.I.B.A., Architect ..... *Double-Page Photo-Litho.*

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Pompeii.

CONSIDERING the great interest of the subject, and the fact that the gradual excavation of Pompeii has been carried on, though slowly, with tolerable continuity since the discovery of the buried city, it seems rather surprising that we have no important work in English on the subject since the *Pompeiana* of "topographical Gell,"* published in 1835, containing the account of "excavations since 1819," and forming a sequel to the "excavations before 1819," previously brought out by him in conjunction with Gandy the architect. Sir William Gell does not seem to have been a *persona grata* to his generation; Byron flings a passing sneer at him as—

> "That mighty limner of a bird's-eye view,
> How like to Nature let poor Nature tell," &c.

but his "Pompeiana" (which should have been more correctly spelt "Pompeiiana") is written at all events in an interesting manner, and has the merit of being, for that period, exceedingly well illustrated; indeed, no expense seems to have been spared over either typography or engravings. Not only has much more, however, been excavated since then, but such a subject is studied to-day with much more regard to archæological and historical accuracy, and in a much more critical spirit. Hence we have every reason to welcome a new work in our language,† carrying the subject of Pompeii up to the time of the most recent excavations, and considering the remains in the spirit of modern scholarship and modern criticism. This book, we find, although originally written by the author, Professor Mau, in German, has not yet been published in that language; the German manuscript has been translated, as a labour of love, by Mr. F. W. Kelsey, of Michigan, with some compression in some parts, and some additions in others on points in regard to which English readers might desire a fuller statement; so that practically it is a new English book, not a translation of one already published in another language. When we say an "English book" we must indeed use the words with a certain reservation in respect of some marked Americanisms of style—such expressions as "back of" and "belonging in," with which our American cousins are diversifying the mother tongue, and which jar unpleasantly on the nerves of the English reader; but otherwise the book is agreeably written.

Professor Mau has been for twenty-five years engaged in studying the ruins of Pompeii and elucidating as far as possible their history, spending the summers at Pompeii, in observations on the spot, and the winters at Rome working up the new material. He of course goes into the history of the city and the classification of the remains with the precision and system usual with German scholars, though he is not very lucid in his description of the origin of the name of the city. The founders, we are told, were Oscans, whose language is found occurring in some inscriptions here and there, and "from this language the name of the city came, for *pompe* in Oscan meant 'five.'" But he forgets to tell us why the name of Pompeii should be in any way connected with the number five. The plural form of the name, however, points, as he says, to its having been originally the name of a clan or set of people who gave their name to the town, "as Tarquinii was the city of the Tarquins, and Veii that of the Veian clan." The city came under the direct political supremacy of Rome about 90 B.C., but in a social and artistic sense there was always a strongly marked Greek element in it, as in fact is evident in its artistic remains as well as in names and other philological evidences.

It is curious to note that Strabo, writing about a century before the terrible eruption which overwhelmed Pompeii and Herculaneum, refers to Vesuvius as an extinct volcano, a mountain the appearance of which suggested that "the whole summit may once have been a fire and contained craters the fires of which died out when there was no longer anything left to burn." There had been, however, a warning of its possible activity sixteen years before the catastrophe, in the shape of a severe earthquake in A.D. 63, causing the destruction of a considerable number of buildings in Pompeii; but so little was the warning heeded, that it seems to have been rather seized upon as an occasion for a rebuilding on a large scale; a fact which has no doubt increased the architectural value and interest of the remains of the city, the dwelling-houses especially, many of which probably on this account represent the latest taste and civilisation of the period; the more so as Pompeii, in the late Roman period, was evidently very much of a pleasure resort—a place where wealthy Romans built houses as holiday resorts.

The destruction of the city, as every one probably remembers, took place in A.D. 79, and we have the description of the event, and its appalling circumstances, preserved for all time in the two graphic letters of Pliny the Younger, some passages in which remind us of some of the experiences of those who had the misfortune to be in the neighbourhood of the Krakatoria eruption, especially the observation that even at Misenum, at the entrance of the bay of Naples and twenty miles from Vesuvius, it became dark "not as on a cloudy night where there is no moon, but as in a room which has been completely closed." It is curious, however, that the city of Pompeii should for so many centuries have so completely disappeared from sight and memory, as Professor Mau appears to think there is no doubt whatever that explorations for valuable property were made shortly after the destruction of the city, and that it is owing to this that little household furniture of any value has been found, and adds that

* It was Theodore Hook who thus labelled him, in a satirical poem on a reception at Brandenburg House :—

> "And then they flaunt brave in,
> Preceded by Craven,
> And, clean and new shaven,
> Topographical Gell."

† *Pompeii; its Life and Art.* By August Mau, of the German Archæological Institute in Rome. Translated into English by Francis W. Kelsey, University of Michigan. London: Macmillan & Co.; 1899.

it is rare to find a house that has been left undisturbed; a misfortune for us now, at all events. But as the houses must have been excavated to some extent in this search after lost property, it is certainly strange that the surface should have been so covered up again that after a century or so all knowledge or trace of it seems to have been lost, until the modern excavations brought it to light again.

In spite of all that has been done, and of the world-wide interest felt in it, only about one-half of Pompeii has as yet been excavated, and one feels rather provoked that there should be such slow progress in the prosecution of such a work. Professor Mau thinks that the remains of all the principal public buildings and temples have already been uncovered, and that we are not likely to find any more buildings of this class except thermæ, and perhaps one or two temples. But even if this be so, it is no reason for the slackening of the work, for in fact the highest interest of all lies in the private buildings, the dwelling-houses, which tell us more of the private life of antiquity than we should ever otherwise have known; and we do not know what more there may be of equal interest to discover.

With the business-like precision typical of the German *savant*, Professor Mau proceeds to a historical and architectural classification of the remains in regard to dates and style, and finds materials for deducing six periods of Pompeiian remains. We need not follow out his classification in detail, the rather as we feel convinced that every other German archæologist who took up the subject would have a different one, and each would have unanswerable reasons to give in defence of his own view; the author practically admits that one or two of his periods present very little basis for definition, and when a German archæologist admits that one may pretty well conclude that the basis of fact is infinitesimal. Certain decisive peculiarities, however, seem to be made out. The earliest period is distinguished by what is here called "masonry with limestone framework," that is, large pieces of limestone built in a kind of post-and-pan fashion, and filled in with rubble in mortar, and some of the buildings with this method of construction are estimated to date as far back as the sixth century B.C. The author takes as a second period what he calls that of the "limestone atriums," so called from the construction of a number of houses found in different parts of the city, but he does not profess to date them more particularly than to say that they are probably earlier than 200 B.C. The third and most interesting period is what he defines as the "Tufa period," in which grey tufa was used for ashlar work in façades and for columns and entablatures, the surface of the tufa being coated with a fine white stucco. This he considers to be the style of work prevailing just previous to the Romanising of the city, and we agree with him that it represents the best period of Pompeiian work in an architectural sense; but we certainly cannot agree that the treatment of the wall decoration at this period, consisting of imitations in stucco of the effect of coloured marbles, is the best class of Pompeiian decoration. The style which has become known all over the world as Pompeiian, and which consists of coloured surfaces within an architectural framework, and with small figure subjects in the centre of the panels, though it may be said to be rather frivolous in character, has a grace and harmony which we shall not be persuaded to depreciate on any critical grounds. It is, in fact, the real contribution of Pompeii to decorative art.

At the same time it may be admitted that the author's attempt to discriminate the styles and dates of Pompeiian architecture is likely to be useful as a suggestion to the visitor to the remains, in directing his attention at all events to the differences in manner of design and construction which are to be noted there, even if he is not able to accept all the Professor's definitions and classification; it is an assistance towards the study of the remains, and in that light the attempt was worth making.

We do not understand what the author means by saying that the plan of the larger theatre at Pompeii is essentially Greek; it is a semicircle with the lines of seats somewhat prolonged towards the stage, making the appearance on plan of a stilted arch, but there is no return of the curve, nor is the orchestra so spacious as in the Greek theatre plan. In regard to the question whether this theatre, perhaps a century older than the oldest Roman theatre, shows any trace of an arrangement which would support Dr. Dörpfeld's theory of the absence of a stage, he concludes that "We may answer positively that it does not. This theatre was never used without a stage — that previously described, or one essentially like it. For while the façade at the rear of the stage owes its present form to a rebuilding, the entrances at both ends, and the walls of the room behind the stage, belong to the original structure." The plan of the small theatre shows a curious difference from that of the larger one, for here the seats form a curve somewhat less than a semicircle, the back rows forming indeed only a segment of a circle stopped by abutting against the straight retaining walls at the sides. The seats were of masonry capped with slabs of tufa about seven inches thick, and it is noticeable that in section the back half of the top of the step is somewhat sunk, leaving a raised ledge along the centre of the surface, evidently to divide the seat in front from the space occupied by the feet of the row of spectators on the next seat above. Both theatres show an arrangement of a small tribune or reserved platform on each side of the "house," between the ends of the general seating and the stage, which seem like the precursors of the stage box of modern times.

Professor Mau devotes a large portion of his book to the remains of the public buildings and temples, which however to our mind are of less interest than the dwelling-houses, partly because, being more lofty buildings, much less of their height is preserved, partly because they do not tell us much which we cannot get from other remains in other places, whereas the dwelling-houses of that epoch are nowhere illustrated in anything like the complete and various manner that we find at Pompeii. Some conjectural restorations of the temples and other buildings are attempted; the drawings are on a small scale and not very good, and not much value is to be attached to them.

The whole of the portion of the book dealing with the dwelling-houses is very well done; the plans are given to a tolerably large scale, and the restorations are here interesting and useful in assisting us to realise the appearance and structure of the dwellings when complete, because in many cases there are really sufficient data for a restoration. Some of the views of the interiors as now existing have the defect which we have frequently noticed in such illustrations, that being either reproduced from photographs, or obviously drawn from them, they exaggerate the apparent perspective length of the interiors in the manner in which photographs, from their false perspective, constantly do. This must be evident to any one in comparing, in some instances at least, the effect of the interior views with the measured dimensions on the plans. Some of the Pompeiian residences, it is true, are by no means small—one or two of them have an atrium some fifty feet long; but the majority are on a small scale, and the views, if taken alone, are somewhat deceptive.

One of the most interesting chapters is that describing the house of the Vettii (so called from names found in an inscription), one of the most recently excavated (1894-5), and remarkable for its profuse painted decorations, and for the extraordinary variation in taste which they display. The author observes in regard to this point—

"The contrast between the earlier and later decoration is so marked that it seems impossible to explain it except on the assumption of a change of owners. We may well believe that about the middle of the first century this was the home of a family of culture and standing, who secured for the decoration of it the best artist that could be obtained, bringing him perhaps from Rome or from a Greek city. But within a score of years afterwards the house passed into the hands of the Vettii, freedmen perhaps, whose taste in matters of art was far inferior to that of the former occupants, and a number of rooms were redecorated."

A great many of the decorative objects illustrated are now known all over the world, and some of them are full of charm; but in the chapter on architecture (which should rather be called "on architectural detail") there are some interesting variants of classic capitals illustrated, which have a new interest. In regard to the more important paintings—pictorial subjects and not mere decoration, the critical view of the present day will hardly echo the extravagant praise bestowed on some of them by Gell; the conception and composition are often admirable, but they are not in a high style of execution in detail; Professor Mau estimates them at their right value. The decorative dancing figures in the panels will always retain their charm; though often slightly and carelessly drawn, there is an exquisite grace and *abandon* about them.

In turning over the plans of Pompeiian houses one is tempted to ask whether there are not suggestions here for interior effect in houses which we might have turned to some account, with the necessary modifications in consideration of climate. The open-roofed atrium with its *impluvium* is a thing of the south, but the columned atrium might without difficulty be adapted, with a skylight, as the centre hall of the house. The curious point about the Pompeiian houses is the serious deficiency of light which there apparently must have been in many of the smaller apartments.

Professor Mau's book is an important and useful contribution to architectural literature, and for the present is certainly the book on Pompeii, and any one intending to visit the

remains should read it first. We only hope that the excavation of the remaining portion of the city may be proceeded with, so as to render a new edition or a new book necessary before long. It seems absurd that in this archæological age half of a buried city should, so to speak, be going begging.

THE DEBATE ON THE HOUSING OF THE WORKING CLASSES.

THE debate last week on the Housing of the Working Classes Amendment Bill was rather academic in its character. Its most useful result was, perhaps, that it showed very vividly the importance of the subject and the difficulty of dealing with it. The Bill of the Government is a simple and modest measure; its chief object is to enable Local Authorities to buy land outside their jurisdiction for the erection of working men's dwellings for the benefit of those who live on it. Mr. Robson's amendment, which was to the effect that the Bill was inadequate in its scope, gave opportunity for a great deal of vague talk. We sympathised with Mr. Balfour when he complained that so many members had dilated on the actual fact of overcrowding, which is admitted by every one.

The various remedies which were propounded by various speakers were all too crude to give any practical help to the solution of the problem, which in truth is a complex matter. That the erection of workmen's dwellings outside the towns may be considered one partial remedy may be admitted, but it is obviously only one, and that a slight one. Workmen and their families do not wish to live in solitary blocks planted in bare fields outside the towns; one of the things which attracts men from rural districts is the movement and life which they find in the actual town itself. Moreover, London and other large towns soon swallow up the small excesses of dwellings which crop up outside of them. Yet if something in the nature of small settlements can be formed outside the jurisdiction of municipalities, but within easy reach by locomotion of the city work, they will help to relieve the present pressure. But the course of the debate showed very clearly that overcrowding will continue long after the Bill becomes law.

Mr. Balfour is of opinion that "electrical traction and other forms of traction are going to play a far larger part in the solution of this difficulty than any of the strange schemes" which various speakers had propounded. It is clear that the existing trunk lines of railways cannot cope with the short distance traffic caused by the going and coming of the daily labourer, and we have no doubt that Mr. Balfour is right. But it is equally certain that without improved means of locomotion better dwellings inside or outside towns are useless to a great extent unless the Local Authorities inside the towns prevent overcrowding. The boy is father of the man, and the boy or girl brought up in an overcrowded dwelling is accustomed to it. Stop overcrowding, and the younger generation will live in packed dwellings with less willingness than is now the fact. It is for this reason that we regret that this Bill does not enlarge the facilities for the erection of workmen's dwellings by Local Authorities in rural districts. The slight step which it takes in this direction is hardly worthy of mention. But if the rural workmen have comfortable and healthy dwellings there will be less incentive to them to depart to the towns, and when they get to the towns they will not be satisfied with the wretched accommodation with which they now often seem to be content. We fear that nothing can be expected from the Government in this respect. But reduce the pressure from outside and the housing problem in the town is simplified, because some portion of it is due to the floating population which comes to London to seek for work. The debate on the Cheap Trains Bill, which took place about the same time as the debate on the Housing of the Working Classes Bill, may be regarded as part of the same discussion. Workmen will not go outside a district until communication is made and until fares are low. It has been demonstrated over and over again that as soon as a railway is made population grows up near it. But it is not possible to compel private companies either to make lines or to alter their general arrangement so as to give workmen's trains a kind of preference. A probable result, therefore, of the power of Local Authorities to build outside their area will be the making of electric tramways between new settlements and the commercial centres.

It was suggested in the course of the debate that claimants in towns whose land is compulsorily taken should not have the right to go before a jury, because this tribunal gives such unreasonable amounts as compensation. There is much to be said for this proposed alteration; a surveyor or an architect is a much better judge of the true amount at which compensation should be assessed than a jury which gives heavy verdicts against a public body with the utmost *sang froid*, though many of the jury will doubtless later on complain of the amount of money which is paid by the Local Authority in housing schemes. In business litigation juries are now much less regarded, and the decision of a judge alone is far more commonly accepted than it used to be. That there should be a list of arbitrators made by the Surveyors' Institution and approved by the Local Government Board, as suggested by Mr. Richards, for the purpose of the assessment of compensation, and of course the leasing of assessments by juries, would be a valuable, if a small, step in the right direction.

One thing, however, this debate makes clear—that legislation on the subject must necessarily be somewhat fragmentary in its character, and that the evil of overcrowding will not be ended yet. The difficulty is too complex, the solutions too numerous. Social conditions also change, and as removals are created fresh causes add to the population of the towns. This being the case, it is obvious that it is the duty of Local Authorities to put the existing law into force vigorously. Sanitary inspectors should be more vigilant and active, and they should be supported by their employers. The Local Government Board should never let the Local Authorities rest, and in the country districts the authorities should grapple with the question of providing more dwellings for the rural labourer. In this way something may be done towards the solution of what Mr. Balfour declared was "the most important and the most difficult question with which statesmen have to deal.

NOTES.

Ancient Monuments. IT is very characteristic of our country that legislation for the preservation of ancient monuments should have to be carried out by private persons and not by the Government. To most people it would appear that no subject could be more particularly one which should be attended to by the Executive Government. But last week it fell to Lord Avebury (Sir J. Lubbock) to move the second reading of the Ancient Monuments Protection Bill, which is to extend the scope of the Ancient Monuments Act, 1882. Perhaps the most useful feature in the Bill is the clause which empowers Local Authorities to take over ancient monuments and to receive voluntary contributions for their preservation. Local persons are in these days often more alive to the desirability of preserving historic buildings than a Government department. The Bill might very well, however, have empowered Local Authorities to pay for the preservation of historic monuments out of the rates. The cost of taking care of a group of ruins or an old house is often very slight, and would not be the least burden on the ratepayers, whereas a local body may not care to solicit or be troubled about obtaining voluntary contributions. However, half a loaf is better than no bread, and any measure, however slight, which helps to preserve the ancient monuments of England is welcome.

London Gas. LAST Friday the Select Committee of the House of Commons gave its decision upon three important gas Bills. The decisions may be briefly summarised as follows:—1. The Bill introduced by the Gas Light and Coke Company to enable it to raise further capital is rejected, partly because it had not been drafted with any intention of meeting the recommendations of the Select Committee which last year threw out a similar Bill; the company is urgently in need of money, and it is to be feared that the unfortunate position in which it is now placed will be severely felt before long by both shareholders and gas consumers. 2. A portion of the London County Council's Bill dealing with prepayment meters and fittings is passed in an amended form. Gas consumers are to be informed of the charges made for gas and fittings, and the maximum charge for meters and fittings is not to exceed 10d. per 1,000 cubic feet of gas consumed, subject to revision by the Board of Trade in seven years. 3. The South Metropolitan Gas Company is to have its standard gas illuminating power lowered from sixteen candles to fourteen candles upon condition that its standard sliding-scale price be lowered from 3s. 6d. to 3s. 1d., and that the company will supply gas burners of a certain type to the consumers *gratis*. Permission is given to the company to accept or reject these terms as it may deem desirable. We think that the Committee will have made a good bargain for the gas consumers if this Bill be passed; and it is satisfactory to observe that the strong popular prejudice for high-grade gas at any cost has at length given way to a recognition of the fact that the standard should vary in accordance with local conditions and local demands, and that the artificial enrichment of good coal-gas which has to be distributed through miles of gas

mains is not to be recommended at present prices.

Commission from Buyers and Sellers.

THE case of Bethell *v.* Horncastle, which came before the Courts last week, should not pass unnoticed. The plaintiff had a piece of land to sell adjoining the London, Tilbury, and Southend Railway. It was purchased nominally by a person of the name of Hillman, really by the railway company. The defendant, the jury found, was acting in the transaction as the vendor's agent, though, strangely enough, he seems to have stated to the vendor, as also did the nominal buyer, that the latter required the land for the purpose of a market garden. He was paid 350*l.* commission by Bethell, and also received 250*l.* from the railway company, and it was this last sum which the plaintiff sought to recover as secret commission paid to the agent. The jury took this view, and gave the plaintiff a verdict. It is clear that the Judge, in summing up, did not express himself too strongly when he condemned a person deliberately being in such a transaction. To tell a person, whether he is your employer or not, that the land was needed by a particular person for a particular purpose, when it was in truth required by others for other purposes, is going beyond sharp practice into the region of misrepresentation. It is equally clear that a man who takes commission from two parties to such a transaction cannot do his best for one or the other. In the view of the jury Horncastle was the agent for the vendor, and in taking commission from the buyers was acting illegally.

Alternating Current Motors.

THE Institution of Electrical Engineers held the concluding meeting of a most successful session last week, to listen to a paper by Mr. Eborall on alternating current motors. The author described in detail the latest form of the Heyland motor, and gave a *résumé* of the performance of American and Continental motors. It will be remembered how the advocates of direct current supply always insisted on the inefficiency and high cost of the alternating current motor. Although the direct current motor is still more efficient and cheaper than the single phase alternating current one, yet the disparity between the two is rapidly disappearing, and Mr. Eborall's figures show that the two or three phase alternating current motor is actually superior in every respect to the direct current motor. Seeing that two and three phase supply is displacing both direct and single phase supply on the Continent and in America, we consider that Mr. Eborall's paper is a most timely one. It also gave rise to an interesting discussion. Mr. Ferranti spoke strongly in favour of single phase supply of low frequency, but the majority of the meeting was apparently in favour of polyphase distribution. Professor Carus-Wilson described Steinmetz's new motor and stated that it had an exceedingly high efficiency and a power factor of 100 per cent. This statement about the power factor, however, was received with considerable incredulity. The simple means mentioned seem quite inadequate to produce such a startling result. One point not mentioned at the meeting, which seems to us vital to the whole question of the efficiency of motors, is that the shape of the wave of electric pressure used to test the motors was never given in stating results. Hence the comparative statements made were of little value, seeing that the tests were made on different circuits. We know practically that alternating current motors will work much better on some London circuits than on others, and will work better at certain times of the day than at other times. This has nothing to do with the frequency of the supply, but is purely a phenomenon due to the shape of the wave of electric pressure supplied.

Home Arts and Industries Association.

THE annual exhibition of this Association is open to visitors at the Albert Hall until Monday next. It does not differ from last year's exhibition in its main features, but is worth a visit from every one who takes an interest in the revival of the old English handicrafts. For several decades these have been obliterated by the use of machinery, and their revival is due to the teaching of Ruskin and Morris, and to this Association, which includes in its membership many of the most eminent artists and craftsmen of the day. We do not believe that the crafts were ever in more than momentary danger of being overwhelmed by the machine. Novelty, cheapness, and rapidity of reproduction were in the early Victorian days formidable rivals, but better times are before us, for we shall see that there can be no competition between two means of production so organically opposed as the machine-made article and that produced by the homely arts of resource and skill; the crafts will always find workers and purchasers. The best section of this exhibition is the wood work, particularly the inlay; there is less striving after novelty, which was so evident at the Arts and Crafts Exhibition. The three hall chairs from Bolton-on-Swale, simply constructed and gracefully inlaid, are from the designs of a lady, executed by a professional. From Pimlico comes a well-designed frame for a looking-glass, decorated with inlay, also from the hands of a lady, and though perhaps without the refreshing charm of the chairs, it is the most important exhibit in this section. Stepney also sends some good things. Next in interest perhaps to the wood-work comes the Haslemere linen-weaving industry, which, besides providing beautiful hand-woven linens, exhibits appliqué work in excellent designs and colours. The terra cotta from Compton shows an appreciation for beautiful form. It is impossible to notice all the things of interest; there are, besides, things most unworthy of imitation or encouragement, due to isolated instances of incapacity on the part of teachers, a fault most difficult to obviate when the teaching is often voluntary and unpaid. It would, we should think, be a great advantage to the Association to have a central depôt, where its productions should always be on sale.

The Birthday Honours.

As is too often the case, we look in vain in the list of birthday honours for any recognition of the claims of either artists or men of letters. At the present juncture it was natural that honours should be largely bestowed on military men, and we presume that some of the nearly unknown names among civilians which are thus illustrated represent some service rendered to the Government which claims recognition. But Art and Literature seem to be unknown quantities to her Majesty's advisers.

HISTORICAL NOTES ON BLACKFRIARS.

ON August 10, 1221, a band of thirteen preaching friars, clad in black, and led by Gilbert de Fraxineto, who is commissioned by his master Dominic de Guzman, arrive in London from Canterbury, on their way to Oxford, where they intend to found an English province of their order. Some of them return to London, as Hubert de Burgh, Earl of Kent, finds them asylum on a site facing Holborn, and lying between what are now Stone-buildings and the south side of Old-square, Lincoln's Inn. In 1276 they migrate to a spot between Lud Gate and the Thames, where Gregory de Rokesley, Mayor 1274-80, has assigned to them a plot of ground in Castle Baynard Ward. They are also befriended by Robert Kilwarby, Archbishop of Canterbury 1272-8, who gives generous help towards the building of their church, whilst Edward I. and Queen Eleanor contribute to the endowment of their order. It does not clearly appear whether the convent was built first. Stow records that—

"Gregory Rokesley, Mayor, and the barons of this City, granted and gave to Robert Kilwarby, Archbishop of Canterbury, two lanes or ways next to the street of Baynard's Castle, and also the Tower of Montfichet to be destroyed, in place of which the said Robert built the late new church of the Black Friars and placed them therein. King Edward I. and Eleanor his wife were great benefactors thereunto. This was a large church and richly furnished with ornaments."

Mountfitchet, or Mountfiquit, Tower, built by a follower of William I., stood near Puddle Dock, on the west of Baynard's Castle.* For their new buildings the friars also demolished the City wall between Lud Gate and the river, which was rebuilt along Little Bridge- (now Pilgrim-) street to the left bank of the Fleet, and so southwards to the Thames. (See Mr. H. W. Brewer's drawing of "Ludgate in the time of Henry VIII.," in the *Builder* of January 4, 1896.) Mr. Abbey's picture in the Royal Academy Exhibition reminds us that Queen Katharine's divorce was tried at Blackfriars, where also was opened, in 1529, the Parliament which condemned Wolsey *in Præmunire*. Other Parliaments met there—one known as the "Black Parliament" (1524), for granting the king a subsidy of 800,000*l.*, which was adjourned to Westminster, another in Henry VI.'s reign; and there Charles V. of Spain stayed during his visit to Henry VIII.

In 1547, Edward VI. sells the hall and the prior's lodgings to Sir Francis Bryan, and two years afterwards grants to Sir Thomas Cawarden, Master of the Revels, "the whole house, site, or circuit, compass and precinct, of the late Friars Preachers," their yearly value being computed at 19*l.* But the grant did not destroy the privileges of sanctuary, so that James Burbadge and his company, albeit expelled from the City, were enabled to erect their playhouse within the precincts and the City wall, but outside of the City's jurisdiction. Two documents of 1553-5, found about fifteen years ago in the Record Office, show that during Mary and Philip's reign two tennis "courses" or "playes" occupied the interior of St. Anne's Church, Blackfriars, and that Cawarden had converted that parish church into headquarters of the masques and revels. Stow says that Cawarden demolished St. Anne's, together with the Friars' Church. The name "Tennis-court" has survived, and St. Anne's churchyard yet remains. By a deed of feoffment of February 4, 1595-6, Sir William More, of Loseley, county Surrey, conveys to James Burbadge (who signs his name "Burbadge," not "Burbage") certain premises described as being "within the precincte of the late Blackfryers Preachers, nere Ludgate, in London." (Confer the Report of the Historical MSS. Commission, 1879, upon the Loseley manuscripts.)

The great fire consumed the later St. Anne's Church, which was not rebuilt, though its thirteenth-century tower arch remained until fifty years ago. Mr. Brewer depicts the former church as on the monastery's north

* William Mountfitchet witnesses a charter of Henry I., reputedly of 1101, giving Middlesex to the citizens for 300*l.* a year with a right to elect sheriffs for that county abrogated by the Local Government Act, 1888.

side. The ground that is being cleared for rebuilding (by Mr. Stevens, of South Molton-street, who has courteously afforded us every facility to see the remains) lies between Friar-street and Church-entry; to the south are Ireland-yard, Cloister-court, and Playhouse-yard. In making foundations (1872) for an enlargement of the *Times* offices, there were discovered supposed portions of the substructures of the dormitory of the monastery. The capital of the shaft, which carries the vaulting ribs now brought to light, rests just beneath the present flooring.* Ireland-yard, it may be noted, commemorates the name of William Ireland, tenant of the house which Henry Walker, citizen and minstrel, of London, sold for 14*l.* to William Shakespeare, of Stratford-on-Avon, county Warwick, gentleman, and which the poet bequeathed to his daughter, Susannah Hall. We may add that the Black Friars, whose prior, John Hilsley, before the surrender on November 12, 1538, was appointed Bishop of Rochester, were recalled to London, *temp.* Mary, and settled for a while at St. Bartholomew's, Smithfield, but were again dispersed in 1559. Stow gives a long list of interments at the Friars' church—it includes those of Margaret, Queen of Scotland, Hubert de Burgh, the heart of Queen Eleanor, and her son Alphonce.

THE ROYAL PAVILION, PARIS EXHIBITION.

THE Royal Pavilion, situated in the Rue des Nations on the Quai d'Orsay at the Paris Exhibition, was inaugurated this week. The building was illustrated in the *Builder* of March 25, 1899. The north side of the Pavilion, that overlooking the Seine, is an adaptation of the south façade of the "Hall" at Bradford-on-Avon, one of the finest existing specimens of Jacobean architecture at the beginning of the seventeenth century; the south side is an adaptation from another house of the same period; the west and east façades are original. The architect, as our readers may remember, is Mr. Edwin Lutyens; the building contractors are Messrs. John Aird & Son. The framework of the building is constructed of steel made by the Thames Iron Company. This framework, employing about 310 tons of steel, was designed by Sir Benjamin Baker. The floors are of concrete; the outer walls are made of plaster, coloured and jointed to represent stonework, on corrugated steel and expanded metal. In fact, the whole of the building, in view of the valuables it contains, has been constructed on lines destined to render it as fireproof as possible.

A large number of English firms have contributed to the decoration, furniture, and fittings, and the rooms and galleries are filled with pictures and works of art lent by various owners.

The rooms are so arranged so as to allow the public to circulate through the house and make their exit by another door. The main entrance is by a door leading from a porch on the south side; this leads into the hall, which contains a set of tapestry panels designed by the late Sir E. Burne-Jones, executed by Morris & Co. On the right of the hall is a small room fitted and decorated by the Corporation of the city of Bath. A short corridor leads from this to the dining and reception rooms, decorated in appropriate style, and furnished with some valuable old furniture; the grand staircase beyond ascends to the long gallery on the first floor. This fine gallery, which overlooks the river, is an adaptation of the gallery at Knole House, and contains a loan collection of the finest examples of the British schools of painting, chiefly of the eighteenth and early nineteenth centuries. The grand staircase and some of the rooms on the ground floor also contain some interesting pictures of the same epoch. The china room, leading from the long gallery, contains specimens of English ceramic ware, and the bedrooms beyond are all furnished in appropriate style.

Amongst the principal firms who have contributed to the decoration and furnishing may be mentioned:—

The Bromsgrove Guild of Applied Arts (ceilings in entrance hall and the complete decoration of the south-east bedroom); Messrs. Collinson & Lock (the salon decoration, tapestry, and furniture); Messrs. Gillow & Co. (oak drawing-room in Jacobean style); Messrs. Johnson & Appleyards (decoration of bedroom and dressing-room, wall panelling and furniture in the style of the seventeenth century); Messrs. Thompson & Co. (grand staircase, secondary staircase, and panellings in oak); Messrs. Waring & Sons (the "Long Gallery" and the "China Closet" decoration, tapestry, and furniture); Messrs. Arthur John Arrowsmith & Co. (decoration of entrance hall, wainscot, oak panelling, doors, &c., in Elizabethan style); Mr. G. P. Bankart, of the Guild of Applied Arts, Bromsgrove (ornamental ceilings in entrance hall and south-east bedroom in cast plaster); and the Corporation of the City of Bath (decoration of the library from designs furnished by Major Davis, City Architect).

The following firms took part in the execution of the work:—Messrs. Cotterell Bros., Bath (ceiling and frieze decorations); Messrs. Jacob Long & Sons, Bath (oak panel decorations); Messrs. Powell & Powell, Bath (furniture and carpets); Messrs. Singer & Sons, Frome (electric light fittings and bronze work); Messrs. Bell & Sons, Bristol (stained-glass windows); Messrs. Lavertons, Limited, Bath (chairs); Mr. Cedric Chivers, Bath (blotting book and leather top of writing table); Messrs. Mallett & Sons, Bath (silver fittings for writing table). Sir Edmund Elton, Bart., lent the Elton ware. Messrs. Broadwood & Sons exhibit a grand pianoforte in oak case, in Jacobean style, in the drawing-room. The casements were supplied by Messrs. Lyde, Elsum & Co., Burt & Potts, Guthrie & Andrew Wells, Hope & Sons, N.A.P. Window Co., W. Smith, and George Wragge. Messrs. Doulton & Co. and Messrs. George Jennings supplied the sanitary fittings and decorations for bathroom and lavatories. The metal work and reproductions of chandeliers are supplied by Messrs. Elkington & Co. Messrs. Lee Brothers supplied and put down the marble tile pavement in the staircase hall, and Messrs. Gooddy, Cripps & Sons the marble tiles in the entrance hall and corridor. The Anaglypta Company supplied the ceiling of the grand staircase; Messrs. Starkie Gardner & Co. firedogs and grates, hinges and door furniture; Messrs. Bertram & Son the panelling, hangings, and furniture of the dining-room; Messrs. Longden & Co. the fireplace furniture of the entrance hall; Messrs. Treloar & Sons the fibre mats; Messrs. Needs & Co. (late Bramah & Co.) the Bramah safes and locks; Messrs. Chubb & Sons locks, safes, and locksmiths' work; Messrs. Merryweather & Sons the steam fire-engine and fire appliances for the protection of the Royal Pavilion, and Messrs. Pain & Sons the flags and decorations. The Royal School of Art needlework supplied the embroidered hangings and furniture covers in the south centre bedroom and dressing-room.

The decoration and furniture of the south-east bedroom are interesting specimens of the work designed and executed by the members of the Bromsgrove Guild of the Applied Arts The plaster ceiling and frieze are modelled on the lines of seventeenth century English work, the walls of the bedroom are hung with green arras-cloth, and the furniture designed on simple lines suggested by types illustrated in the pictures of the early Florentine painters. The dull oak is relieved by simple copper mounts and hinges, and painted and embroidered panels illustrative of mediæval legends, chiefly of the Arthurian period. They are all delicately finished and executed, and carried out in the spirit of the style and period of the furniture itself. Among the legends illustrated are "Tristan and Iseult," "The Queen's Maying," "The Beguiling of Merlin," "The Red Cross Knight and Una," &c. The copper fire-place is specially interesting, being formed of simple rivetted copper plates with hammered and repoussé decorations. The mosaic work over the copper hood represents King Arthur and Guenevere.

The following workers took part in the decoration of this room:—Mr. G. P. Bankart; Mr. J. P. Haynes (furniture and woodwork); Mr. Walter Gilbert, Mr. T. Parsons, Miss Talbot (metal-work); Miss Talbot, Miss Newell, Miss Bloxeidge, Miss Deakin (embroidery); Mr. Joseph Crouch, Mr. Edmond Butter, Mr. Walter Gilbert (general design of the room); Mr. Walter Gilbert (carpets); Mr. Harold Rathbone (pottery); Mr. A. J. Gaskin (black and white work); Messrs. H. A. Payne, Bernard Sleigh, F. W. Davis, R.I., and Mrs. Gaskin (decoration); Mr. G. M. Bridge and Mrs. Gertrude Bridge (mosaic); Mr. G. E. Over (printing).

Among the remarkable collection of pictures exhibited in the house the following may be specially mentioned. In the long gallery are Hogarth's "The Lady's Last Stake," Constable's "The White Horse" and "Opening the Lock," several works of Gainsborough and Romney, and one Reynolds. In the drawing-room are Turner's "Walton Bridges" and "Mercury and Argus," and portraits by Hoppner and Romney. In the entrance hall are four tapestries of subjects from the Arthurian legend, from designs by Burne-Jones; in the dining-room are portraits by Reynolds, Raeburn, Romney, Gainsborough, and Lawrence, and in the drawing-room five pictures by Burne-Jones, among them the "Laus Veneris." Thus the official headquarters of the Prince of Wales has been made into a kind of cabinet of works of art in painting and decoration.

* The shaft is apparently of a pale green marble; the capital, octagonal at the cap, of a reddish brown marble. The large pointed arch has been carefully removed, and will be set up at Selsdon Park, Croydon.

PARIS EXHIBITION:

NOTES ON DECORATIVE WORK IN THE BRITISH SECTION.

ENGLAND takes a very modest position in the Paris Exhibition, and it will be a certain disappointment to many British visitors that she has not put out more strength. We are much behind for one thing, and in the industrial section we are certainly laggards. Some of the spaces allotted to us will evidently not be occupied, and the general impression is not what one would wish to receive. The decoration of the building itself is just as backward, though why this is so it is not easy to see, considering how forward our neighbours are in this respect. Some exhibitors complain of the French workmen, and wish they had the command of English labour. It would appear that we have entered into the business somewhat faintheartedly, and many will put this down to the racial feelings aroused by the events of the last few months. This may be so, but it is nevertheless a pity that in such a vast emporium as this *Exposition Universelle*, where there will be gathered a universal crowd from all over the world, we do not show to greater advantage. In this connexion it is interesting to note how the smaller nations have come to the front. Japan, for instance, has secured a very large space stretching right across the building, though none of the hundreds of cases contain so far anything. Germany has come out very strong, as if she intended to show her growing amity for France. The United States, our neighbours on one side, have made a much greater effort than we have, and evidently have an eye to the rush of Americans during the season. Their goods are of such a nature as to attract the well-to-do globe-trotter, and they will doubtless secure a return. We display some silver work and ornamental nick-nacks, but it is difficult to be strong in these departments unless the firm is sunk in the individual. We might have attracted the connoisseur's attention by having a display of the work of some of our representative craftsmen, and it is a great pity that some concerted effort in this direction was not made, as the individuality that has been imported the last few years into our crafts is *not* shown in Paris. The Americans, on the other hand, exhibit a special collection of pottery which has won for itself a reputation over there, and one lady has an exhibit of original bronzes, and all round one feels the personal note more strongly than one does in our courts. A small room fitted up with exhibits from last year's "Arts and Crafts" would have been attractive, and would have made our show more representative of what we are really doing—of the trend of the art of the day in Great Britain—than it is. Take, for instance, painted glass, which has become a much more personal craft during the last few years than one would think from what is shown at the Paris Exhibition; here would have been an opportunity of letting the world see what we are doing, whereas only one English firm exhibits work which we are already familiar with, and which marks no special advance or a reaching-forth towards untried possibilities. The Americans have brought their exhibits up to date, and whether we admire or not what is shown we have to acknowledge that their work has more character than ours.

Four firms make a display of furniture and fittings, two of them showing rooms more or less complete. Messrs. Heal have a quaint-looking bedroom, which, unfortunately, is not

too well lighted, though that is no fault of theirs. There is plenty of *ego*, as Mr. Kipling would say, here, and this room has the distinction of being unlike anything else in the Exhibition. Messrs. Howard have two rooms with oak panelling in one and furniture to match. There is a nice restraint and comfortableness about these two rooms which is very refreshing after the florid furniture of France, Germany, and Italy. The workmanship looks thorough, too. As a small detail, we think the panelling of the dining-room would have been better if kept perpendicular, instead of being divided by the line of horizontal panels. Mr. Henry shows some well-made furniture, and Messrs. Waring & Gillow display two quaint shaped coffers with large gilt hinges in their space as their most original effort. Some inlaid furniture, notably one of ebony and ivory, we seem to have seen some years since at a former Paris Exhibition, but their stand is unfinished.

Messrs. Doulton have the largest space of any British exhibitor, but only the shell of their exhibit is as yet to be seen. The building they have put up is in grey-green stoneware, with panels of coloured tiles of semi-Persian design, the colouring of which seems a little crude by the side of real Eastern tiles, which may be seen in the Algerian and Tunisian courts. There is a display of Bretby faïence and Pilkington tiles, but competition is very keen in these two crafts, and the casual visitor will come to the conclusion that we are outstripped here. In porcelain we make no show whatever. We only make the *pâte tendre*, or low-priced porcelain, in this country, and we have nothing, therefore, that can compare with the large display in the Denmark court of hard porcelain, even if we had exhibited our manufactures.

In the galleries Messrs. Heaton, Butler, & Bayne show a four-light window and some cartoons, Messrs. Essex and Messrs. Jeffreys wall-papers, and the latter firm show their embossed copper panelling, the designs identical with their embossed papers. Seeing what an immense business that of manufacturing wall-papers is, one is rather astonished at the small display. That of Messrs. Essex & Co. is perhaps the more novel in character, more adventurous at all events, though a few of the colour schemes strike one as original to the extent of crudity; but it is unfair to judge of wall-papers merely hung up in single pieces.

The British visitor to the Exhibition will naturally turn from his own to the American court, and one must acknowledge that in some departments they are much more original, judged, that is, by the two displays. Messrs. Louis Tiffany, Francis Lathrop, and J. & R. Lamb show painted and leaded windows. The distinctive feature about these windows is the use of moulded glass. Certainly some rich and new effects are obtained by its employment; the effect is a little heavy, but this may be due to insufficient light and not to the opacity of the glass itself. The effect is obtained very largely by the leading and to a very small extent by the paint on the glass itself.

The silver work, of which there is a large display, has more character about it than that displayed in our court. The "dead" or frosted silver appears to have taken the place of our highly-polished plate. It seems a pity that one of the English firms did not include, or at all events bring into prominence, the work in beaten silver which has come so much to the front the last few years.

These are merely a few impressions gathered after three visits to the English section, for criticism in detail must be deferred until all is ready.

THE ARCHITECTURAL ASSOCIATION:

PARIS EXHIBITION PRIZE.

WE are asked to state that the date for sending in applications for this prize, offered by Mr. Arthur Cates, has been extended to June 30, and the conditions have been somewhat modified. The following are the conditions as now standing:—

"Candidates to be members of the Architectural Association without limit as to age.

It is essential that they shall have passed either the Intermediate or the Final Royal Institute of British Architects examination.

Candidates are invited to submit practical working drawings, and a specification or brief descriptive report of a technical character written by the candidates themselves, together with suitable testimonials obtained for this purpose, addressed to the Hon. Secs. of the Architectural Association, 56, Gt. Marlborough-street, W., on or before June 30.

Candidates will be asked to meet the Prizes Sub-Committee of the Architectural Association in a personal interview.

The Committee will require to be satisfied that the candidate possesses an adequate knowledge of French as written and spoken.

Candidates acquainted with technical French as used in relation to architecture and building, and with the metrical system in its application in plans, surveys, and accounts, will be given a preference.

The examiners will have full power to award the prize or not as they may think fit.

The successful candidate will be required to spend four weeks at Paris in studying, examining, and reporting upon all or any matters of genuine architectural interest at the Exhibition, either in the buildings or the exhibits, and shall deliver to the said Committee on or before December 22, 1900, an illustrated report descriptive of the same.

The sum of 20*l.* will be paid to the successful candidate in two instalments, the first on his leaving England and the second on his submitting the illustrated report to the satisfaction of the Examining Committee.

The candidate may be required to read a paper before the Architectural Association on the subject of his study.

The illustrated report or a complete copy of the same shall be presented by the author to the Architectural Association Library, and the General Committee shall have the right to publish the whole or any part of the same at its discretion in 'Architectural Association Notes.'

G. B. CARVILL } Hon. Secs."
R. S. BALFOUR }

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION:

"SOME ESSENTIALS TO HEALTH."

THE last meeting of this session in connexion with the Discussion Section of the Architectural Association was held on Friday evening last week at 56, Great Marlborough-street, W. Mr. W. B. Hopkins presided, and among those present was Dr. G. V. Poore, F.R.C.P.

The first part of the business was to appoint the officers for the ensuing year. Mr. C. H. Strange was elected chairman, Mr. R. H. Waymouth, vice-chairman, and Messrs. G. H. Smith and T. H. Pearson, hon. secretaries.

The Chairman read a letter from Professor Corfield, expressing regret at his inability to attend.

Mr. H. C. Lander then read a paper upon "Some Essentials to Health." After some preliminary observations, he said:—

"The medical profession has done noble service in discovering and emphasising the real safeguards against disease which are summed up in the word 'cleanliness'—clean air, clean water, clean food, clean bodies, clean houses, clean habits, and in showing that a due allowance of sunshine and light and of all the other gifts of Nature are absolutely necessary for the proper development of human life and the prevention of disease. I have referred to what I may call this pioneer work of the doctors because I think there is an opening for similar work in the architectural profession.

The architect's influence may be felt in either or both of the two ways; first, in the particular buildings he erects and in his personal contact with his client; and, second, in a wider sense, in his power as a specialist to educate public opinion. The public are much more ready to accept a statement upon any subject made by a specialist than by any one else. If any particular conclusion upon some point in relation to healthy dwellings was arrived at and insisted upon by any considerable number of architects, such opinion would carry very great weight.

But to return to his first sphere of influence. The architect has it within his power, either by bad planning and ignorance of sound principle in sanitation, or, on the other hand, by knowledge and skill in design, to influence very directly for good or evil the lives and the health of those who live or work in the buildings which he erects. The effects of bad planning are felt in the want of light and air and sunshine into living-rooms, schools, and workshops; want of proper ventilation; in dampness arising from the ground; in placing the rooms with the wrong aspect; in dangers arising from the undesirable position of the sanitary fittings, as well as from the fittings themselves and the drains, together with the absorbent or otherwise insanitary nature of the materials of which the building is composed.

The great bulk of our lives is spent within doors, far too much time if health were the only point to be considered. We are born, bred, and educated within doors, we eat and sleep and to a great extent earn our living and take our recreation within doors. The nature of the buildings in which we spend such a large proportion of our lives must have a very distinct influence upon the public health. Insanitary buildings—that is, those which by their construction or fittings in any way interfere with the needs of a natural and healthy life—are a source of public danger, and must be dealt with accordingly, whether they be public buildings or private houses. There are none better qualified than architects themselves to undertake this aggressive sanitary reform as applied to buildings, as doctors have undertaken similar work in the sphere of medicine.

The architect's duty does not consist merely in supplying the demands of the public or of commercial or other requirements, such a conception is degrading and narrow, and, if followed, would convert the architect into an ordinary commission agent. The architect is the professional adviser of his client, but he is something more even than that, or should be, as the medical man has a duty beyond merely attending to the needs of his own little circle of patients. Every true doctor has the public health at heart and the alleviation of the pain and suffering of humanity, and every true architect should have an interest in the public health outside and beyond the interest he takes in providing his own particular client with a healthy home or a well ventilated church. The forward movement in the prevention of disease was not in answer to any public demand, but was undertaken upon their own initiation by the medical profession, and, in one sense, against their own private interests, since doctors live by curing disease, not by preventing it, and if architects are to take their share in assisting this movement, the initiative must come from within; at all events, I think we shall agree that this would be the more dignified course rather than to wait until such reforms in building regulations and customs as are necessary are demanded by the public or thrust upon us from without. It is the right and the duty of the architect to use his influence by every means in his power to promote the public health in all those matters which come within the knowledge and scope of his work. If public prejudice is against him, he must seek to educate public opinion; if by-laws or other restrictions act prejudicially in the interest of the public health, or if they need amending or abolishing, he must agitate and bring pressure to bear upon the proper authorities until such enactments are repealed, amended, or remodelled; and if private profit stands in the way of reform, he must uphold the principle that the greatest good to the individual is attained only through the well-being of the many, and that the maintenance of a high standard of public health is the best, and indeed the only, protection for the individual.

If we as architects are as much in earnest about raising the standard of public health as are the members of the sister profession of medicine, the progress made would be much more rapid than it is, and the influence of the architect would be much greater, both as adviser to the client in each particular case, and as an advocate for improvement in all sanitary legislation.

In these days when so many things are said and done in the name of patriotism which had better have been left undone and unsaid, we need to remind ourselves that true prosperity comes only through the dignity and happiness of the lives of the people, and that those conditions which promote the fullest and most vigorous life amongst the greatest possible number are the only true bulwarks of a country's greatness, and that any ideas of power founded upon a basis which places the life or health of its citizens in a position of secondary importance is a standing danger to any country far greater than any possible combination of external forces.

In lowering the death-rate and in raising the standard of health and physique, of manliness and endurance amongst the sons of the nation we are doing no mean service, and yet these things are to a great extent possible only under conditions which come within the scope of an architect's work and knowledge, and upon which he should, therefore, surely have something to say.

It is of the first importance to a proper development of the human frame and to the maintenance of the body in health that every

individual should enjoy a constant and sufficient supply of fresh air, whether waking or sleeping. The Government and Local Authorities recognise the fact that human life can not be properly sustained unless an adequate amount of fresh air is supplied to each person, and they have in consequence fixed or recommended a minimum allowance to be provided in the case of hospitals, lunatic asylums, prisons, lodging-houses, schools, and factories, and in dwellings for the working classes when erected under Part III. of the Housing of the Working Classes Act, but the great mass of the working-class population are housed in dwellings which do not come under either of the foregoing heads, and in which, owing to the keen competition for accommodation and high rents an insufficient amount of air is the rule rather than the exception. Even when by-laws exist intended to deal with the evil, their enforcement is very difficult if not impossible, owing to the vastness of the problem.

Overcrowding is of two kinds, overcrowding per room and overcrowding on area. Overcrowding per room results when more persons live, sleep, or work in any room which does not contain cubic capacity or sufficient ventilation to support that number without injury to health. Such injury need not be sufficient to oblige any one of them to seek medical advice or hospital treatment, but it will mean to all, in greater or less degree, a lowered vitality, an increased susceptibility to disease, and a loss of physical and mental strength and vigour. A lowered vitality lays the body open to the attacks of any disease to which it is susceptible or to which it may be exposed. The result is that when through exposure, want of food, or other contributing causes some definite disease shows itself and the patient in the end is certified to have died from consumption or whatever else it may be, we are apt to overlook the fact that probably in the majority of cases it was the overcrowding and want of sufficient pure air which started the trouble in the first instance.

We have in some districts by-laws regulating the amount of window space to be provided per superficial foot of floor, and the proportion of such window, which must be made to open, and the provision of fireplace or other adequate means of ventilation, but no regulations fixing the maximum number of persons who could inhabit such a room without injury to health. The result is that overcrowding is not only common, but is the rule in working-class districts, and no attempt is made to check the evil except when the attention of the Medical Officer of Health is drawn to some particularly flagrant case. Besides the rooms to which I have referred, vast numbers of persons sleep in London every night in cellars or rooms or cupboards under stairs which have no window or means of ventilation whatever, and the well-intentioned, but well nigh powerless, sanitary inspector has to struggle single-handed against conditions in which little improvement can be looked for until the conscience of the people has been aroused, and the question has been taken in hand in a serious and determined spirit.

The number of persons living under overcrowded conditions in London alone amounts to 1,247,000 persons, or one in three of the whole population. Of the 2,333,000 persons who live in tenements of one to four rooms,

762,000	live	2	to a room.
299,000	„	3	„
114,000	„	4	„
43,000	„	5	„
18,000	„	6	„
6,000	„	7	„
1,800	„	8	„
1,032	„	9 and upwards	to a room.

When one remembers the size of an average room in a London tenement and bears in mind the fact that in the case of the single room the washing, cooking, eating, and sleeping of members of both sexes, and sometimes of two or more different families, and their household work is carried on in the one room, the marvel is not that the standard of morality is low and that the inmates fall an easy prey to disease, but that they live as long as they do and get through the work they do.

The above figures relate to London, but London is not worse in this respect than other large towns; in fact, it is in the coal-bearing counties that overcrowding appears to be most severe.

It is, however, with overcrowding on area that the architect is brought more directly into contact. When the evils of the old slum property became apparent, certain philanthropic persons set themselves the task of providing a more sanitary and commodious type of dwelling for the accommodation of the working classes, and as very heavy ground-rents had to be paid they decided to carry up their buildings to a much greater height, and the model dwelling came into existence. Small slum property, which had once been cottages with back gardens, and had accommodated 100 persons, was pulled down and upon its site were erected model blocks to hold ten times that number. These model blocks were, and still are, generally owned and managed by semi-philanthropic bodies, who keep their buildings in good sanitary repair, prohibit overcrowding per room, and admit only respectable and responsible tenants. But in spite of these facts, it is now generally admitted by most eminent authorities that the overcrowding on area permitted by the block system is quite as dangerous as the overcrowding of individuals in a single room.

Although the exact number of persons who may be safely housed per acre has never been fixed, there is no doubt whatever that after a certain limit has been reached the death-rate per thousand increases in proportion to the number of people crowded on whether they are provided with what are generally considered sanitary dwellings or not. If the flat system should eventually take the place in towns of the separate cottage, and the flats themselves through want of attention and overcrowding sink to the level of the slum, the death-rate would probably be appalling.

As the size of our cities continues to increase the competition for sites, especially towards the centre, will continue to force up the value of the land, and the temptation to erect high dwellings will become greater than ever. At the same time the decline of agriculture is forcing more men into the great towns, when in the course of a few generations they die out altogether. I venture to think that the number of persons now living in London whose grandparents were not country people would be exceedingly small. The death-rate in cities is invariably higher than it is in country districts, and it tends to become higher towards the centre of the city, the mortality amongst infants being exceptionally high.

The relation between mortality and overcrowding is shown by the following table:—

Proportion of Total Population living more than Two in a Room (in Tenements of less than Five Rooms).	Death-rate, 'All Causes,' 1885-92.
Districts with under 15 per cent.	17·51
„ 15 to 20 per cent.	19·51
„ 20 to 25 per cent.	20·27
„ 25 to 30 per cent.	21·76
„ 30 to 35 per cent.	23·92
„ over 35 per cent.	25·07

This constant and ever-increasing drain upon the country districts, and high death-rate in towns, is an exceedingly serious matter from a national as well as from an individual point of view, and deserves the most careful attention and vigorous remedies. We cannot afford as a people to allow the healthy children of the country-side to constantly drift up to the great towns to live under conditions which most surely mean a decline of physique, a loss of energy and nerve-power, and eventual extinction.

If we wish to see the energy and power of endurance which has characterised our countrymen in the past maintained, if we wish it to be possible for every man to become the father of children as vigorous and healthy as himself, who will be worthy to hand down the traditions of the past to coming generations, we must see that wherever they live they are decently housed and provided with as much breathing space as their bodies naturally require. But to draw the people up from the villages and to house them, or 'warehouse' them, as some one has called it, under conditions which are dangerous to adults but simply murderous to children is certainly not the way to attain this end. No one can arouse the public conscience upon the subject of the proper housing of the people better than architects themselves.

The difficulties in the way of reform are no doubt very great, but the country has not yet awoke to a sense of the danger. When public opinion has once been roused means will be found, as they always have been found in the past in the case of other evils, to remedy this evil too. In the meantime it is for those who have the interest of the people and the country at heart to keep the facts well to the front and to repeat them in season and out until public interest is aroused and public action stimulated.

If a high standard of health is to be maintained in towns a limit must be fixed to the number of persons to be housed per acre, and the amount of air space allotted to each person or house very greatly increased.

The extremely small area allowed at the back of the house under the London Building Act was fixed in the interest of the property owner and not in that of the public health. Very high buildings, especially in the country, should also be prohibited, as they shut out the light and air to surrounding houses and streets, and tempt adjoining owners to go one better and build still higher, until as is only too common artificial light has to be used throughout the day as well as the night upon the lower floors.

The Local Government Board Model By-Laws are not suitable as they stand for application in the country. Owing to the depression in agriculture and other causes it is almost as difficult to house the agricultural labourer as the city mechanic. It is essential that rents should be low, and in order to meet this demand the houses must be cheaply built, preferably by the Local Authority, and there is no reason why, under proper restrictions, they should not be constructed of wood. In many instances rural landowners do not wish to encourage the building of small houses upon or near their own estates, and allow cottages to fall out of repair and become untenantable without attempting to supply their places with others. In other cases the cottage belongs to the farm, and is in effect a 'tied house,' so that if a man loses his job on the farm he loses his home at the same time. These are some of the causes which help to drive men up to the towns, and render the solution of the housing problem there more difficult.

The question of ventilation is closely allied to the foregoing, but I do not propose to devote much time to the discussion of particular methods, as you have had a paper upon that subject at a recent meeting. Generally speaking, fresh air inlets should be not more than seven feet above the floor, and outlets the higher the better. If there is much difference between the temperature inside and outside, the fresh air should be warmed before it enters. For private houses, probably, the window forms the best inlet for fresh air; an opening at the ceiling level either into the smoke flue, or into a ventilating flue, provides a convenient outlet.

There is no advantage in lofty rooms, and unless adequate means are provided for removing the foul air from the upper part they become a positive source of danger.

The ventilation of public buildings must, of course, be upon a much more elaborate scale. It might be desirable to prohibit the use of any public building until the Sanitary Authority had been satisfied that good and sufficient means of ventilating the same had been provided, the sanitary inspector testing and passing the ventilation by some practical means as he now approves the drains. Ventilation, whether of public or private buildings, must always be in the hands of some responsible person. I have very little faith in any automatic system, owing to the fact that the conditions are constantly changing; if the air in a room is to be kept fresh a certain amount of attention must be given to it. If an inlet is provided, as likely as not, the architect will, upon his next visit, find a piece of paper neatly pasted over it. There is only one reliable means of securing fresh air, and that is by educating the people up to a sense of the need for fresh air and the danger of foul air.

Many people account for having caught colds by going out into the night air after some meeting, or the theatre, or through sitting in a draught. The probability is that the cause was not going out into the night air or the draught so much as the lowered vitality consequent upon breathing the foul air inside the building, which rendered the person liable to the chill, which would not otherwise have been contracted. The proper time to admit fresh air is before the room has become close and stuffy.

Another important point in planning is the admission into the rooms of as much sunlight as possible. Sunlight is fatal to certain kinds of disease germs, and its beneficent and health-giving presence should be encouraged as much as possible. If the plot of land upon which you have to build faces north, you must try

and induce your client to place all the principal rooms at what he would call the back of the house. To an architect no house should have any back or front; it should be fit to be seen all round.

It only falls to the lot of the architect to provide a water supply to houses in the country which are beyond the reach of any water company or local supply. The importance of pure water is second only to that of pure air. No pains should be spared to insure the purity of the supply, and the wanton and needless fouling of pure water should be visited with the heaviest penalties. Lead is generally used for water supply pipes, though its use is not free from danger, which is much greater with some waters than with others. Iron pipes are safer, though more liable to decay and choking. Lead pipes lined with tin are good. Storage cisterns, if used at all, should be small, should be provided with a cover, and should be placed in positions where there is a good light and where they can be easily cleaned. Rain water may often be collected and stored with great advantage, either within the house or in a tank underground.

In days gone by valleys or low-lying ground was generally selected as affording the best sites for houses, probably to be near water. Other things being equal, high ground is now admitted on all hands to be the best. Gravel and sandstone are generally considered the best soils upon which to build, though probably very few soils or sites of good elevation exist which cannot be built upon with impunity if properly drained or otherwise dealt with. Concrete over the whole site checks gases from rising, and should never be omitted. If the site is too much exposed to north-easterly winds, a belt of trees affords a good protection.

In these days when comparatively few persons live in their own houses, or have any fixity of tenure beyond a quarter's notice, it has become the habit to spend no more than is absolutely necessary upon the fittings or internal permanent decoration. The interior is left in mere skeleton form, to be finished to suit the taste, or want of taste, and to last the term only of each tenant who does not feel disposed to spend money upon the house itself in the shape of good floors of hard wood or mosaic, frescoed or panelled walls, enriched ceilings or stained glass. Modern floors are in most cases so poor that it is necessary to cover them up with carpets which retain dirt and render the rooms much more difficult to keep clean. Hard-wood floors are not only much more beautiful but are far more sanitary. They are also cheaper in the end, as they outlive many carpets, and their use should be encouraged as far as possible by architects.

The last subject to which I wish to draw your attention, as one upon which we, as architects, may help to educate public opinion in the interest of public health, is in the matter of drainage and the disposal of excreta. Upon this question I am wholly in agreement with the view which has been so ably set forth by Dr. Poore in his books on 'Rural Hygiene' and 'The Dwelling House,' two works which should not be absent from any architect's library.

In towns drains and sewers for the water carriage of excreta may be regarded as necessary evils. At all events, their abolition and the substitution of a more natural and healthy system can only be brought about after the advantages of a better method have been demonstrated elsewhere. But in country districts where no sewers exist and where the alternative would be the cesspool, there is no possible reason why the dry earth system should not be adopted in every case.

We are all familiar with Moule's 'Earth Closet.' I lived in a house for eight years in which two of those closets were fitted up and used constantly, and can testify from personal experience to the entire absence of smell in the house and to the simplicity of the apparatus, the ease with which they can be managed, and the high manurial value of the product. Moule's system, however, has one serious drawback, and that is that it has no means by which the moisture can drain off, and thus prevent the contents of the receptacle from becoming wet and heavy, and so more difficult to manage and more offensive when turned over with a spade. The method recommended by Dr. Poore entirely does away with this objection, the form of the closet allowing all moisture to flow off at once, and the excreta being temporarily covered with a thin layer of dry earth, and eventually buried in a shallow trench in the garden beneath an inch or so of soil only. The dog with his hind legs scatters a little dust over his excreta, and the cat performs a similar function with her fore paws, and each goes its way, having unconsciously given us an example of the most simple, most natural, most sanitary, and most scientific method of which it is possible to conceive. Had men been willing to take a lesson from the lower animals and adopt a course as reasonable as that which has been prompted by their instinct, innumerable lives might have been saved, many forms of disease would have been practically unknown, vast sums spent upon sewers and sewage disposal works might have been saved, and the land enriched by the manure which is now wasted. But instead of doing so we have been at infinite pains to do in a very complex, wasteful, dangerous, and costly manner what might have been accomplished in a simple and direct fashion with great gain to our health, great enrichment of the land, and great saving of expense.

It would be waste of time to point out the dangers inseparably connected with the use of drains and sewers and water-carried sewage. The cesspool at best is a huge receptacle for filth which slowly leaks out and poisons the surrounding ground, often endangering the water supply. We all know that even of drains laid on the most approved principles, very few will bear the water-test six months after they are laid, and even if they do stand, there is constant danger from emanations from traps, or from traps becoming unsealed in dry weather, from smells from vent pipes, or from escape of sewer gas under pressure. The danger begins as soon as the excreta is mixed with water and the dark and damp drain forms an excellent breeding ground for microbes and ready means of distributing disease over a wide area. There is an idea prevalent that once anything has disappeared down the outlet of a water closet apparatus it is out of harm's way and one need not trouble about it any more; the system of water carriage has been introduced for the benefit of lazy people to save trouble, and it has caused infinitely more trouble than the old-fashioned privy at the bottom of the garden, though this was bad enough from the sanitary standpoint.

The modern water closet apparatus with its accessories is costly in the first instance, is frequently getting out of order, and is always a source of greater or less danger; at best it is exceedingly wasteful. All that is required with the dry earth system is a pit or catch under the seat of the closet built of brick or concrete, and faced with cement or other non-absorbent material, and well ventilated; the floor of this pit is laid to a fall to carry off the moisture, and a small quantity of earth thrown in through the seat after each time the closet is used. The pit should be emptied daily, from a door on the outside, this is the work of a few minutes only, and the contents buried superficially. This is the only natural and absolutely sanitary way of disposal in the country, and should be adopted whenever it is possible. With ordinary care in the planning the closet can be made as private and as convenient in every way as the ordinary water-closet, whilst the owner of the house is relieved of an anxiety on his own and his family's behalf in the matter of diphtheria and other diseases arising from defective drains, and is instead rewarded by the increased fertility of his garden, as all those are rewarded in one way or another who study nature and follow her methods.

I am quite aware that in dealing with some of the foregoing subjects I have gone outside the sphere within which it is customary to confine discussions here, but I have done so intentionally because I think it is most undesirable to limit ourselves to debates upon construction or every-day practice or to consider our profession as a matter between individual architects and their clients only. An architect's work is not confined only to the composition of mortar or the strength of a girder, any more than a doctor's work is confined to the making of pills or the amputation of limbs. We have a duty to the public, and one aspect of that duty is in connexion with the raising of the standard of public health in all matters relating to building; there are other aspects, such as the education of public taste and the preservation of historic buildings, but these are outside the limits of the present paper. There are, no doubt, many other ways in which the special knowledge and training of an architect qualify him to speak with authority upon the subject of sanitary buildings, but those to which I have referred are the most important. The depopulation of rural districts and overcrowding of large towns is fraught with the most serious dangers, and presents the gravest problems for the consideration of the sanitary reformer. Writing many years ago, William Cobbett used to describe London as 'the wen,' and there are without doubt many points in which our great modern cities do resemble malignant growths, especially in their dependence for their very existence upon a constant supply of fresh life from the country. The London that Cobbett knew has long since been swallowed up and has disappeared; the growth of the suburbs in all directions has never been so rapid as it is to-day. It is well from time to time to stand aside and consider whither it is all tending and whether the best interests of the people and nation lie this way; and, if not, what means can be taken, if any, to place a healthier and brighter life within the reach of all. I have not attempted to suggest any solution, my chief object being to lay the facts before your notice, and to urge the desirability of architects devoting themselves more thoroughly to these questions, and themselves bringing the facts before the public. When once the facts have been grasped, and their consequences fully realised, solutions will be found. Any conception of the scope of an architect's purview which excludes his relation with, or interest in, the public health is incomplete, but to make the basis sufficiently broad to include a knowledge of sanitation in its widest sense, and an active interest in its practical application, is to render the greater tribute to the scope and dignity of the architectural profession."

Mr. George Smith, in opening the discussion, said that Mr. Lander had laid great stress upon the point that architects should consider their work from a point of view which was not perhaps quite sufficiently realised at the present time—the point of view of the public health as distinct from that of the client's. That was all very well, but there were very few architects who would have the courage, when a client wanted a certain number of people on a definite area, to say that they could not honestly carry out his wish because it would be contrary to health. Before they dealt with the number of people on a definite area, they might ask the medical profession to consider the subject, and to give them some facts to go upon. A few years ago it was considered that 300 was the proper number of people per acre for safety, but now the London County Council housed 700. This was all right while the thing was going well, but should an epidemic arise it would be very serious to have 700 people on an acre. He did not altogether agree that architects were a suitable body to form public opinion upon this matter. Architects, as a profession, did not take any very great interest in public affairs. The lists of the Members of Parliament, the Council, and other public bodies showed architects to be conspicuous by their absence. It was absolutely necessary for the architect thoroughly to understand sanitary science as applied to buildings; even the most artistic of them ought to understand the drainage of the buildings which they designed. In some of their drainage plans, however, sanitary science was left to take care of itself. During the past sixty years the medical profession had gained a considerable amount of information, and the fact that typhus fever had been stamped out was due to the way they aroused public opinion on the subject. There was no doubt that one of the worst things we had to contend with was lowered vitality caused by sanitary defects. This was more serious than any definite disease, because we did not realise the danger. Lowered vitality was not shown in the death statistics, but, nevertheless, it was the primary cause of many deaths. Then with regard to what Mr. Lander said regarding light entering a building. This matter seemed to lead to the question of ancient lights, especially with reference to towns. For his own part he could not see why each building should not light itself from the ground upon which it stood. This would also secure sufficient ventilation and fresh air. He agreed that the ventilation of public buildings should be tested; and while he admitted that the condition of agricultural cottages was about as bad as it could be, yet he did not think

that the remedy suggested by Mr. Lander was the right one. In his opinion Local Authorities were not fit and proper persons to build cottages; there should be an extension of the co-operative system so that by payment of rent the agriculturist could buy his cottage in a definite number of years. If something of this sort could be done it would be doing a great deal toward stopping the migration of the agricultural classes to towns. He strongly opposed Mr. Lander's view with regard to wooden buildings as country cottages, and he failed to see how they could be made sanitary and kept so. They were all very well for the first year or two, but then there were heavy repairs and they were not weather-proof. In conclusion he mentioned that within the last four or five years the Local Government Board had sanctioned back-to-back houses in a Leeds improvement scheme. That was a backward step and was to be absolutely condemned.

Dr. Poore said that they wanted to instil some feeling of respect and of responsibility among the working classes towards the houses in which they lived. We have heard a good deal about the slum landlord and of dwellings unfit for human habitation, but we heard too little of the beings who were unfit to inhabit any house. This was a matter which must really be attended to, and in cases of polluted streams they should trace the evil right back to the man who caused it, and punish him. He had become the owner of some cottages, partly by necessity and partly for the sake of carrying out a sanitary experiment. Three of them were in such a bad condition that it would be perfect folly to attempt to repair them. He could not turn the tenants of these hovels into the street, but he told them they must seek for other cottages. None of them were in any hurry to go, and one old woman clung there over a year. She said the place was good enough for her, and she had been there all her life. With regard to overcrowding, his personal experience was that when a man and his wife took a cottage, and children came, "they came not in single spies but in battalions." Some people could not keep a house clean, while others in exactly similar circumstances had a neat, tidy, clean, and wholesome place. It was not always drink, but a disposition to muddle. There was no doubt that the personal factor was a very important one. On the question of overcrowding they must commence at the beginning, and clearly they must have some law with regard to the number of people which could be housed upon a given area. That law must not be restricted to London alone, but must be applicable to the whole country. He sometimes wondered how Klondike was being built; there were probably thousands of people there. Something suddenly made a place fashionable, and all the evils of London were at once repeated there. There might be a conference to discuss this point. In hospitals and asylums they did not think it safe to have less than 100 square feet per person. Supposing an acre was treated in the same way, there would then be 430 persons housed upon it—430 would be the maximum population. Any law to be passed must be radical. Then it had always seemed to him that in the by-laws for the erection of houses and so forth the great question of proportion had not been sufficiently considered. He was in favour of giving people as much liberty as possible. He would not object to their building a house a thousand feet high, although it would not be a cheap thing to do, but the house must be a thousand feet from another house. If a man wanted to build a higher house in a street than his neighbours let him go back from the frontage line with it. There was nothing more ghastly than the dull monotony of some of the London streets. By strict attention to proportion they might make it very difficult to overcrowd. The suggestion that every house should be lighted from its own area was a good one, but it was very difficult to do on sites that had already been built upon. In a city like London the most they could do when a house was pulled down was to say that the new building should not be greater than the others unless certain rules were complied with. There were too few attempts to apply proportionate rules in some of the by-laws. For instance, the Local Government Board by-laws gave permission to build houses 25 ft. and upwards, with 25 ft. of ground at the back—he was quoting these figures from memory—so that a house could be erected 80 ft. high, with only 25 ft. back.

Mr. Garbutt said that, in referring to cleanliness, Dr. Poore had unconsciously said in effect what Kingsley wrote, "who will be clean *will* be clean," but, unfortunately, there were some people who would not be clean. His own experience had shown him that some people liked to live in the greatest possible dirt and filth. There was no doubt that the building of cottages and of buildings for the working classes had, of late years, become increasingly difficult, and one of the great reasons was the immense rise in the cost of building. It was a sort of retribution upon the working man for his sins, in systematically seeking to force building price into an artificial state. He had five years' apprenticeship, and one of the things he noticed was that the workmen would only do a certain amount of work each day, and that each job was to take a certain specified time. That was the way British workmen acted, and as a natural result the cost of building increased and the rent became higher than it otherwise would have been.

Mr. C. H. Strange said the need of educating the architect as well as the public to the essentials of health was a very crying one. They could not emphasise that point too much. The public, taken as a whole, were absolutely ignorant of what were the essentials of health with regard to houses, and some architects were also ignorant of what should be considered fundamental principles. There was this difficulty to contend with, looking at it from the point of view of the general public. Houses were not built by architects, whose influence was extremely small. The people who employed architects did not overcrowd or persist in living under insanitary conditions. They not only needed to influence themselves in the essentials of health, but their brothers in the profession and, in fact, every one with whom they came in contact.

Mr. A. S. Tayler said he did not think a change or any great improvement could be brought about by law. It seemed to him that laws were necessary evils and that they should do without them as far as possible.

Mr. Maule remarked that Dr. Poore hit the nail on the head when referring to the personal factor. If they wanted to get a better state of things they must get at the root of the matter—the people themselves. If they taught men how to act with regard to this question they would have made a great step. With regard to the exodus from the country to the towns, he considered that the reason was the lack of amusement and things to interest after the men finished their day's work. They wanted more village community life.

Dr. Poore said he was afraid that the cause of the exodus from the country was the price of corn and the huge quantity of frozen meat that was imported. There was a good deal of amusement in the country, and the rustic who took a real interest in his work and saw all the changes of the season was never dull. The rustic was very shrewd. The cockney might be more lively and better at repartee, but the rustic was the man who would not be taken in by lying advertisements. With regard to lowered vitality, one cause of that was living in the gases of putrefaction. Wherever there was a water sewage system there must be putrefaction, and wherever there was a trap under a cottage sink likewise gases arose which were not good for man to breathe. This, more than anything else, was the cause of the pallor of the people who lived in towns.

Mr. Dawson observed that in New South Wales there were never any wells, the water being stored above ground, and each house had a shower-bath.

Mr. G. H. Fellowes Prynne said they must deal with facts as they existed. Not only the poor but the wealthy and well educated sometimes showed great ignorance of the first principles of sanitary arrangement. He recollected a clergyman who had the top of his ventilating shaft just under the eaves of the roof and then was unable to account for the foul smell in the attic. They had also to face the fact that the principles of sanitation had immensely altered within the last ten years, and they continued to alter. The science was progressive, and they were improving. To his mind the best remedy to prevent the exodus from the country was three acres and a cow. The housing problem became a greater difficulty every day.

The Chairman said that as far as possible every citizen ought to take a proper public spirited interest in local government. Mr. Lander seemed to suggest that the community at large was to blame for what after all had been the fault of individuals.

Mr. Lander, in reply, said that slumming was a disease which grew upon people, causing them to sink lower and lower in the social scale, until they became utterly demoralised.

The usual votes of thanks concluded the proceedings.

THE SURVEYORS' INSTITUTION:

EXTRAS AND OMISSIONS IN BUILDING CONTRACTS.

An ordinary general meeting of this Institution was held on Monday evening at No. 12, Great George-street, Westminster, Mr. T. M. Rickman, President, in the chair.

Some donations to the library having been announced, and the names read of those candidates who have passed the recent examination,* Mr. E. H. Blake read a paper on "Extras and Omissions in Building Contracts." After some preliminary observations, he said a contract might be unjust to either the building owner or the builder. "The injustice to the former usually arises in the following way: Responsibilities are sometimes thrown on the builder when estimating by leaving to his discretion some matter of doubtful yet ascertainable value; matter which a little investigation on the part of those arranging the contract would free from any doubt or uncertainty whatever, and thus enable the competing builders to price it at fair value instead of allowing a good margin to cover such contingency. Every point on which there is any doubt, and every matter as to which there may be the slightest misunderstanding during the execution of the contract should, in justice to all parties, be thoroughly threshed out before the contract is signed. Another occasional source of injustice, if indeed it can be called an injustice, is the impracticability of the plans and specifications. The law on this point seems hard on the builder, requiring him in some cases to satisfy himself as to the possibility of completing the work in the manner described by the architect or engineer. He must either, therefore, possess technical knowledge superior to that of the latter, insist on the quantities being part of the contract, and contract to do only the work therein contained, or, refuse to bind himself in a contract which contains a clause requiring him 'to erect and complete the structure' or 'to erect a complete building.' It may be said that there are few architects or engineers who would refuse to acknowledge the responsibility for their oversight or inability, but two or three important cases which can be brought against such an assertion will be referred to later on. Parties to a building contract are liable to many risks and responsibilities. The building owner or his agent has to consider, among many other things, the following possibilities:—Excess of cost over amount of contract. Failure of the builder, with the attendant inconvenience. Delay in completion through weather, strikes, &c., often involving considerable pecuniary losses.

On the other hand, among the possibilities which the builder has to consider are—Strikes, with changes in the price and efficiency of labour. Alterations in the price of materials. Failure of the building owner. Accidents and liability under the Workmen's Compensation Act. Impracticable plans. Inaccurate quantities. Penalties for non-completion to time. A reasonable contract is one which reduces the element of risk to either party to the smallest possible amount, and places all such liabilities as those mentioned above on the right shoulders.

Of all the contingencies attendant on building contracts the matter of extras and omissions is one of the most difficult in the final settlement. The knowledge of the building owner or employer in reference to the details of the work is, in almost every case, limited. A very small percentage of clients thoroughly understand the technicalities of plans and specifications. It is often found that the client would have had this or that rather different had he fully understood the meaning of the drawings and descriptions. The position of the architect should be, therefore, and generally is, that of adviser and confidant, rather than that of a servant to the employer. He becomes the agent of the employer in the fullest sense of the word, and it is customary for the contract to give him control over the works with the power of giving orders binding his principal

* See our last issue, page 491.

as to liability for payment. Contracts occasionally curtail the customary powers of the architect. It should be noted, however, that there is legally no authority implied to him in reference to the ordering of extra works. As almost all contracts confer large powers on them, it follows naturally that all architects are, as a body, men of considerable responsibility, who can be trusted to act with the utmost impartiality between the parties to the contract.

The necessity for very complete and stringent conditions of contract cannot be too strongly urged. The position of architects under contracts is not always satisfactory. There is frequently a lack of confidence between the architect and builder. No matter how fair-minded the architect may be, he is always liable to be regarded as having more or less bias towards his employer, the building owner. It has been said that when confronted with two alternatives, one that of submitting to the employer a heavy bill of extras (sometimes to some extent attributable to the architect's negligence), or on the other hand that of pleasing his employer at the builder's expense by cutting down the bill of extras, an architect is apt to be found very human. That these remarks do not apply to the great majority of contracts, is beyond doubt, but as the temptation sometimes exists, and there may be men who cannot resist it, the conditions of contract should be so framed as to remove such possibilities. They should provide that none but work done on written orders signed by the architect should be recognised as extra work, and the contractor's priced bill of quantities, or a verified copy of the same, should be deposited for use as a schedule in valuing all extras or omissions.

Every point on which it is possible that a misunderstanding may arise should be carefully considered and thoroughly threshed out before the signing of the contract. This careful consideration is rapidly becoming a matter for the surveyor rather than for the architect. Such a practice cannot be too strongly recommended. Only in the process of taking off the quantities can all the points of uncertainty be eliminated.

Quantities, where taken off by the architect, are often prepared in a more or less haphazard way. The practice of quantity surveying is not one to be dabbled in. There is no matter of opinion about the quantity of labour and materials in a certain piece of work. Either there is so much of this or that or there is not. Therefore either the work is correct or it is incorrect. Trifling inaccuracies frequently result from insufficient description or omission of detailed labours. The question as to whether the quantity surveyor is guilty of bad faith with the builder and building owner in the case of inaccurate quantities depends very much on the position and mode of appointment of the quantity surveyor. It would be obviously unjust to say he was liable under such circumstances as those in the well-known case of Priestly and Another *v.* Stone, where the quantities were taken out from unfinished drawings and delivered to the architect, who afterwards materially altered the drawings, wrote the specification apparently regardless of the bill of quantities, and submitted the drawings, specification, and original bill of quantities as a basis of tendering. It was held by the court that there was nothing in the nature of a contract between the quantity surveyor and the builder, and there could therefore be no liability. In the course of the judgment in this case, Mr. Justice Stephen recommended the quantities being made part of the contract. Notwithstanding the decision in Priestly and Another *v.* Stone, it is still customary to consider the quantity surveyor morally liable to the builder, to some extent, for inaccuracies. On the other hand, the question arises, Is the building owner justified in receiving work for which he has not paid? For, if the quantities are insufficient in some particular, the contract price will also be insufficient.

To ensure accuracy in bills of quantities they should be prepared by a man of recognised ability as a quantity surveyor and made part of the contract. Their accuracy is also dependent on the time allowed for their preparation and the completeness of the drawings and specification from which they are prepared.

A process which cannot be too strongly condemned as unfair to all parties is that of issuing bills of quantities for the purpose of tendering, but repudiating any responsibility for their accuracy, saying that a few days or a week will be allowed the contractor for the purpose of verifying them. Any one acquainted with quantity surveying knows that this means beginning *de novo*. It is therefore unfair to the builder to expect him to do in a few days what has most probably taken the architect's assistants as many weeks, and it is unfair to the employer, because in such a case the builder adjusts matters in his own way by adding a heavy percentage for contingencies. This practice is happily dying out, chiefly owing to the difficulty of getting builders to tender on such conditions.

The employer should not be kept in the dark about any part of the proceedings. Let the question of quantities and the employment of the quantity surveyor be brought before him, and the latter's position be recognised. Let the employer see that the accuracy of the quantities should be guaranteed, and that they should be made part of the contract. On the other hand, the builder should be given clearly to understand the position. The work of final settlement of the accounts is greatly facilitated and can be carried out on a more equitable basis. It cannot be too strongly emphasised that the essence of a just and ultimately satisfactory contract is exchange, in strict equity, of cash for kind.

There should be no confusion as to the meaning of the term 'extras.' They can be defined as all works not included in the contract, for which instructions have been given. Omissions may arise when the quantities form part of the contract, or by agreement between the parties when the quantities do not form part of the contract. In the latter case there ought always to be a clear understanding at the time, that the value of the omitted work will be claimed by the architect in the final settlement. Extras are usually brought about by the change of mind of the client, or from his not knowing whether the plans and specification really represented what he required, or from incompetence or want of foresight on the part of the architect. They may also arise from unforeseeable circumstances of site, or in some cases from impracticable plans.

A contract for a complete building includes all work indispensably necessary to the completion of building, but where the quantities form part of the contract there may arise extras, though indispensably necessary. For instance, items due to exigencies of site may be omitted from the quantities because not previously known to be necessary. Where the quantities do not form part of the contract, works indispensably necessary to complete do not come under the head of extras, even though they be not mentioned in the contract, shown on the drawings or described in the specification."

In support of this the author briefly mentioned the well-known cases of Sharpe *v.* San Paulo Railway, Thorn *v.* Corporation of London, and Bottoms *v.* Corporation of York. Proceeding, he said "Many other instances might be given, but the effect of all is similar. Again and again it has been held by the courts that plans, specifications, &c., are in the nature of information supplied to the builder for the purpose of enabling him to tender, but that there is no implied warranty either of their accuracy or practicability. It is unreasonable to expect the contractor to possess technical knowledge superior to that of the engineer or architect. Possibly, too, some professional gentlemen would hardly like to be taught by a contractor.

These cases, therefore, seem to point a moral, not to enter into such contracts, rather than to increase respect for the law. They indicate that the law requires amending, and that contracts must be meanwhile made to provide against legal defects. This is best done by making the quantities the basis of the contract. The contractor will then be liable to do only the work for which he has tendered a price, and the employer will only be entitled to receive value for which he has agreed to pay. I have already stated that a contract for a complete work includes everything indispensably necessary to the completion thereof. I would add that it is immaterial that such works are omitted from the specification or drawings, or the drawings are impracticable, or that certain things are understated or miscalculated. It is also immaterial that such works are omitted from the quantities, whether they form part of the contract or not. This is amply proved by the decisions in the following cases:—Williams *v.* Fitzmaurice, Sharpe *v.* San Paulo Company, Thorn *v.* Corporation of London, The Hydraulic Engineering Company *v.* Spencer, Scrivener *v.* Pask, Coker *v.* Young, Kimberley *v.* Dick.

While dealing with the subject of impracticable plans it should be noted that when the quantities are not part of the contract authority given to the architect as to the ordering of extras, does not give him power to order as extras work indispensably necessary to make such plans practicable. Should an architect order as an extra, or certify for as such, anything indispensably necessary to the contract, unless such certificate is a final and conclusive one, neither the employer nor the architect is liable for payment to the builder, who should know that the matter was within the meaning of the contract, and that he would have been liable for breach of contract if it were committed. Should the architect have power under the contract to interpret the meaning of all points within the same, it is probable that in case of impracticability his proposed method of completion might be questioned by the builder. In such a case, if the contract contains an arbitration clause, it will generally be a matter for reference to determine whether or not such proposed method of completion is within the contract. If the builder contract to do an impossibility, he alone is responsible, and he must at his own expense entirely find a satisfactory way out of the difficulty. Some forms of contract give the architect sole power over such points. If the contractor has no confidence in the architect he should avoid any such contract.

The position of an architect with regard to extras is practically this. He must, if not authorised to order extras on behalf of the employer, obtain the latter's instructions in reference to any additional work which may be contemplated, before sanctioning its commencement. If the contract provides that no extra work is to be undertaken without the architect's written order, such order should be given before the work is commenced, and no certificate for payment should be issued in regard to any extra work executed without such written orders. Further, where the quantities are not part of the contract he must not incur liability on the part of the employer by ordering as extras, or certifying for payment as extras, work which is indispensably necessary to completion.

In reference to the architect's authority to order extras, the question of custom arises. Legally, there is apparently no authority implied to an architect as to the ordering of extras. He must be expressly authorised to give instructions on such matters, either verbally or in writing, and the question of his authority is one for a jury. It is, however, unusual to see a clause in a building contract expressly giving authority to the architect in reference to the ordering of extra work, although he is generally given some power to determine what is and what is not extra to the contract. The almost universal custom is, I think, to regard the architect as the employer's agent in the fullest sense of the word. Under any ordinary form of contract in which there is no express stipulation as to the extent of the architect's authority, a builder would rarely be found to question the powers of the architect on this matter.

The next point with which I would deal is that of written orders for extras. The law and practice on this matter is very clear. Though the conditions of contract require all orders for extras and omissions to be in writing signed by the architect, there is yet a way in which the builder can obtain payment for work executed in direct opposition to such a condition, or on the verbal orders of the architect. The contract may contain a clause giving the architect the power to grant a final and conclusive certificate, and, if he include in such certificate amounts in respect of extra work unauthorised in the manner agreed upon, the employer is bound to pay.

Under any other circumstances, the employer is not liable in the absence of written and signed orders as required by the conditions of contract. The mere verbal promise on the part of the employer or his agent to pay for any extra work, or to adjust matters by a cutting-down process in other directions, is of no value whatever.

Again, if the contract defines extras and omissions as only such additional or varied work as may be authorised by the architect in writing, any extra work ordered by the employer, either verbally or in writing, must be regarded as in the nature of a separate

matter quite outside the contract. Apart from the legal aspect of the matter, there can be no doubt that to avoid complications, all orders should be transmitted to the builder through the medium of the architect.

According to the judgment in the case of Russell *v.* Sa Da Bandeira, a builder can claim payment for additional work, without written orders, when such are necessary for extras, provided that he can prove the extra work to be independent of the contract. Such a point would generally be a matter for reference to an arbitrator, who would decide whether or no the work was or was not independent of the contract.

A point of no small importance was settled by the case of the Tharsis Sulphur Company *v.* McElroy. It was held that even where interim certificates described and included items of additional work, such certificates did not dispense with the necessity for written orders where such were a condition precedent to payment.

It may be noted incidentally, that the measuring surveyor has no authority in respect of performance under the contract. He has in all cases to deal only with facts, and the matters forming the basis of the contract as placed before him by the architect.

The granting of a final and conclusive certificate by the architect is a matter requiring great care. Even though the architect may certify as extra, work that has never been done, or which was indispensably necessary to the completion of the contract, the employer has no remedy and must pay, unless he can prove negligence on the part of the architect or collusion and fraud on the part of the architect and builder. The equity of this is open to question. It would appear to give the architect too full a power to find in his own favour on all questions involving negligence on his part. The vesting of sole authority in the architect under the final certificate clause alone, is liable to be sometimes very inequitable to the builder, since the architect has the power of determining what are, and what are not, extras to the contract. An interesting case bearing on this point is that of Rogers *v.* James. This was a case in which an architect sued the building owner for the balance of his account for services rendered in connexion with the building of a house. The building owner counterclaimed for negligence in supervision of the work and proved that certain concrete works were omitted from the foundations, and that various other items of labour and materials were not supplied. The counterclaim for negligence was met by a denial, and plaintiff stated that he had made a deduction in respect of these omitted works when giving his final certificate. A clause in the conditions of contract provided that

'the decision of the architect with respect to the amount, state, and condition of the works actually executed, and also in respect of any and every question that may arise concerning the construction of the present contract or the plans and specification, or the execution of the works hereby contracted for or in any wise relating thereto, shall be final and without appeal.'

The jury found that the architect was negligent and had not awarded sufficient in respect of the omissions. In confirming judgment, the Master of the Rolls said that

'the certificate was final as between the builder and building owner. Any question between the building owner and the architect would not be decided by it. As between the builder and the building owner the architect had awarded a sum which the building owner could not question. As against the architect the building owner could question it.'

In concurring with the Master of the Rolls Lord Justice Lopes remarked that

'such a clause gave the architect no jurisdiction to decide any question of negligence as between himself and the building owner, and the building owner could bring an action for negligence against the architect.'

There are many cases arising out of the final certificate clause, nearly all pointing to an unreasonable attitude of blind confidence on the part of the builder towards the architect. A notable example is furnished by the case of Tullis *v.* Jackson and others, which had reference to a clause providing that 'the architect's certificate shall be final and binding, and shall not be set aside for reason of any charge of fraud, &c.' Such a clause was held by Mr. Justice Chitty to be quite good and valid. It would, indeed, be difficult to find much sympathy for a contractor who bound himself by such an unreasonable decision.

The next point to which I would devote attention is the question of time during which extras may be ordered. To come under the heading of extras to a contract any additional work must be done under orders issued during the execution of the contract. All work executed under orders issued after the completion of the contract must be regarded as the matter of a fresh transaction altogether, and cannot be dealt with as extras to the former contract. The whole of the conditions governing the previous works are void in respect of this, which must be paid for at a fair value, and is not subject to the architect's valuation. In case of dispute the matter is one for reference to an arbitrator or to be settled by a jury.

The legal aspect of the adjustment of variations is somewhat in conflict with custom. In the case of a *considerable* departure from the plans and specification during the execution of the contract, the matter requires careful adjustment. The work must be considered as extra within the meaning of the contract, provided there is evidence that the parties were agreeable to its being subject to the contract terms and conditions. If, however, the departure from the plans, &c., involves a class of work of much higher value or quite beyond anything originally contemplated, and the terms of the contract do not appear to apply, such extra work should be treated as wholly out of the scope of the contract and not subject to the architect's valuation. Parts of the judgments in the case of Thorn *v.* Corporation of London clearly show that it is otherwise if the terms of the contract are applicable, and there is evidence from which it may be inferred that it was the intention of the parties that the new work should be subject to those terms. On the other hand, the decision in Rex *v.* Peto shows that where the variations involve a class of work quite beyond anything originally contemplated, and it is evident that the conditions do not apply, such further work must be regarded as beyond the meaning of the contract and paid for at fair value, the basis of such fair value to be in the opinion of a jury or arbitrator.

It is, however, customary to stipulate that no variation shall vitiate the contract, but that all authorised extras for which a price may not have been previously agreed, and any omission, &c., shall be measured and valued, &c. Further, that the variations shall be valued at the rates contained in the contractor's original estimate, or, where the same may not apply, at rates proportionate thereto.

It is, of course, contrary to common-sense reasoning that the architect should have legal power to practise extortion on the builder or fraud on his client, and it was long since decided by the Courts that an architect had no power to substitute one class of work or materials for another without adjustment of the figures in the final settlement.

Another question which has sometimes to be considered in dealing with extras, is that of suggestions to the employer by the builder. Such a point only arises in the case of small contracts, generally in the erection of private residences. In larger works all dealings take place through the medium of the architect. It is sometimes found, however, that the builder has suggested to the employer the use of other materials, or a rather different method of construction to that intended. If any such suggestions are not made with a clear understanding that they will involve extra cost, the builder cannot recover from the employer the cost of carrying them out. Neither can they be treated as extras to the contract except by an express agreement to that effect.

A similar question sometimes arises from the suggestion to the architect, of other materials and work in place of those specified, owing to difficulties or impossibilities of conforming with the specification. In such case it should be distinctly noted that the employer or the architect must be apprised of any extra probable cost, and sanction to such extra must be obtained in the manner provided in the contract, in order to entitle the contractor to payment in respect of it. But there is an important side issue on this point. If the contract is an entire one, *i.e.* involving the necessity to complete, the case is different. The contractor has agreed to perform a certain work within a definite time for a specified sum of money, probably subject to penalties for breach of contract. It is then entirely his affair if he has contracted to do an impossibility, and the substitution of other materials or work, although of higher value, must be at his own expense and subject to the sanction of the employer or architect. On the other hand, it is only equitable that if the employer or architect assent to the use of materials or work of less value than those agreed upon in the contract, he cannot claim a reduction on the contract, except by express agreement.

There is sometimes a tendency on the part of contractors to take an unfair advantage of the delay caused by the ordering of extra work. Generally speaking, extension of time means an increase of cost to the contractor, but it is frequently impossible, after considerably adding to or varying the work, to get the contract completed in the stipulated time. The matter of delay is one which should be left entirely in the architect's hands. He should have full power to extend the time if desirable owing to the addition of work to the amount originally contemplated. In reference to the payment of liquidated damages for failure to complete by a certain day, it was held by the Court of Appeal in Dodd *v.* Churton that if the delay was consequent on orders for additional work, the contractor was exonerated from the payment of damages unless there was an express agreement to the contrary.

An occasional source of difficulty in building contracts is the carelessness sometimes shown in drawing up the conditions. One still occasionally finds forms of contract made up of a string of more or less traditional clauses handed down from master to pupil, without any careful examination into their exact significance. Difficulty sometimes occurs in this way through the insertion of overlapping clauses.

An instance—perhaps the most prominent—is that of a contract containing a more or less general clause referring all matters in dispute to an arbitrator, together with clauses making the architect's certificate final. The effect of such a combination is, apparently, that the builder may refer any points to the arbitrator's decision during the course of the work, unless they had already been decided by the architect's certificate. This has been argued of the nature of a dispute prevention clause, but it is only that to a limited extent. If the architect has issued a certificate to the effect that certain moneys are due, there can be no dispute as to such matter. A dispute may, however, be raised on this matter at any time before the issue of the certificate, with the result that the architect's jurisdiction is ousted and his powers replaced by those of the arbitrator. The certificate clause cannot be overridden by the arbitration clause if the certificate is conclusive and a condition precedent to payment. The certificate would only be impeachable for fraud. Generally speaking, however, if the certificate be not conclusive, matters within it may be referred under the arbitration clause. The importance of the arbitration clause cannot be too strongly emphasised.

It was suggested at one of the meetings of this Institution that the arbitrator should be required to view the building from time to time, and thus be in touch with the progress of the work, and be capable of giving his decision without delay. Strong arguments against such a course are the further complication of the parties to a contract already of a complicated nature, and the circumstance that there is, I think, a very general opinion that the arbitrator should have no connexion whatever with the job until a dispute has arisen.

A large part of the matters generally referred to the arbitrator under an arbitration clause is of the nature of measurement and valuation. This, I think, points to the fact that there is no more suitable person for the position of arbitrator under a building contract than a quantity surveyor of recognised standing. I do not agree, however, that the arbitrator should be the surveyor whose work probably forms part or the basis of the contract. It is very desirable that the gentleman appointed to the position of arbitrator should be in no way connected with the contract, beyond being appointed under it. I am aware, however, that the practice of appointing the agent or servant of either party as the arbitrator has been upheld by the courts. The decisions in Ives & Barker *v.* Willans, Donkin *v.* The Proprietors of the Leeds Canal, and other cases, clearly show that the architect or engineer may arbitrate over matters resulting from his own acts unless there is good reason to expect that he will act unfairly. Neither, under the

decision in Jackson *v.* The Barry Railway Company, is he ineligible for the position of arbitrator by reason of his having expressed his opinion before the reference.

The adjustment of accounts on the completion of a contract is a matter now very generally attended to by a surveyor, usually the surveyor who prepares the quantities, and with whom the copy of the priced bill of quantities is generally deposited. There is little to say in reference to this final adjustment. The basis of it may be a bill of quantities priced by the contractor, a bill priced by the surveyor, tenders being at a percentage on or off, or it may be that the quantities are not part of the contract as in the case of a simple lump sum contract. In most cases the contract prices are the bases of adjustment. In the case of a lump sum contract in which the quantities do not form part of the contract the variations are measured and priced at fair value. It is practically impossible to price them at the same rates as must have been adopted by the contractor in order to produce his contract price. Such a procedure would involve the taking off of the whole of the work, pricing, comparing the total with the contract price, and adding or deducting a percentage throughout in order to make the two totals agree.

As has already been stated the tendency of practice is in the direction of making the quantities part of the contract. Many arguments have been brought against this, probably the principal being that the employer never knows what he has to pay until the contract is complete. Such an argument, in most cases, applies equally well to contracts in which the quantities are not incorporated in the contract. Again it has been argued that the practice of making the quantities part of the contract is somewhat misleading, and is not to be recommended, as items may in that way become extras which would not otherwise be so. This depends largely on the surveyor's position and mode of appointment. The work of the quantity surveyor should only be entrusted to thoroughly competent men, who, in consideration of a fair fee, will undertake the responsibility for their errors.

The practice of incorporating the quantities in the contract, and providing that the work to be done shall be that contained therein, is strongly to be recommended. Such a course generally ensures the thorough consideration of all points of doubt in the plans and specification, and the elimination of any discrepancies. If the quantities are incorporated without making them the basis of the contract, there is, according to the decision in Priestly and Another *v.* Stone, no implied warranty of their accuracy. If the quantities are inaccurate, and the contractor bases his tender on the assumption that they correctly represent the amount of labour and materials to be provided, there cannot be much dissension from the opinion that the surveyor is morally liable for such misrepresentation, even though it be accidental.

The circumstances of every case must, however, be considered independently. There is always the possibility of such curious procedure as that which led to the case just referred to, Priestly *v.* Stone, where the plans were completed and the specification written regardless of the bill of quantities which had been previously prepared and deposited with the architect. Such a case furnishes a forcible example of the necessity for the completion of the drawings and specification before submitting them to the quantity surveyor. Much of the responsibility for this state of things rests on the shoulders of the building owners, who too often want to see the building erected in an unreasonable time.

In conclusion, I would again urge the necessity of fairness to both parties to a contract. It must not be forgotten that the essence of a just contract is exchange in strict equity, of cash for kind. There is still, unfortunately, among some architects and contractors, a feeling of natural enmity. There should be no foundation for such a feeling, and there can be no doubt that the thorough investigation of the matters which are intended to form parts of the contract, and the elimination of all uncertainties by the surveyor before the signing of the agreement, has had much to do with the improvement in the relations between architects and contractors."

Mr. Henry Lovegrove, in proposing a vote of thanks to the author, said that the paper was carefully arranged, and touched on a number of points in connexion with building contracts and the preparation of quantities. The great difficulty, and the cause of extras arising, was the very great haste in which building work was now done—often a hasty specification and rough drawings on which to prepare quantities, and if sufficient time could be found for the work the architect would be able to prepare at least some of the details, and the surveyor would be able to take out the quantities in such a way that the contractor would not be mislead. As to arbitrations, he thought that surveyors might be more often appointed as arbitrators under building contracts than gentlemen whose chief business was designing and carrying out purely architectural work. The position of quantity surveyors under a contract was often an absurd one. He knew of a case where a large public building was tendered for, and when the tenders came in they very much exceeded the amount fixed by the Corporation in question. The drawings were sent back to the architect, and the Corporation refused to pay the quantity surveyor his charges, although he had had many weeks of hard work in the matter and had been put to the expense of lithographing the quantities. That, of course, should not be possible, and matters should be put on an equitable basis. The charges, too, for quantity surveying appeared to be very low, while it was now somewhat the fashion for public bodies to appoint their own surveyors, and not the architect, and the fees were put at a very low figure. As to quantities being made part of the contract, the work would, it was said, be done in a slovenly way; but he did not think so. He knew of some very hard cases of builders being practically ruined in cases where extras were not paid for—extras which had not been ordered in writing not being paid for; but whether quantities were part of the contract or not, the adjustment of extras and omissions seemed to be a simple matter; it was just a question for the architect and builder to consider and decide what are extras and omissions. Architects should explain to the employer how such items arise, and an attempt should be made to prevent building contracts being a sort of gamble.

Mr. H. Chatfeild Clarke, in seconding the vote of thanks, said that in all questions of extras and omissions arising out of a contract, the trouble generally commenced at the beginning. If an architect would only do his duty, for which he was paid by the employer, by preparing proper drawings and specifications from which the quantities could be properly taken, not much trouble was likely to arise between an honourable architect and builder in the carrying out of the work. The trouble often arose when the architect did not prepare a specification—a practice which was becoming more and more general—leaving it to be prepared after the quantities were taken out by the surveyor, who did not always know what were the architect's intentions. If these matters were started on straight lines, a large amount of trouble would be saved. Extras and omissions must, of course, be dealt with at the final completion, and there must be an arbitration clause for these under the contract, but he rather gathered from Mr. Blake that in the contract he had been speaking about, there was a great deal more power to arbitrate on all kinds of things under the contract. That was not a fair contract between the employer and builder, for the architect, if that were so and there was arbitration as to materials, he would have little power under the contract at all, whereas he should be master during the execution of the work. He quite agreed with the author that clear knowledge should be given to the employer as to what was being done under the contract; often trouble arose because an architect did not tell the employer that a quantity surveyor was being engaged and that the employer was legally liable for the fees. As to the question of a final certificate, that was a very important matter, as to which no architect could be too careful. Every architect should make it clearly known to his client that he intended to certify the extras; he should be perfectly frank with him beforehand as to what were the extras and omissions. If those extras were the subject of a written order from the architect's office, he did not see how trouble should arise, except from carelessness. The builder could produce the written order at the end and there would be little room for trouble. Of course, all these questions depended on the honesty of the architect and the builder, and if each wished to act fairly in the matter and to the employer, he did not see the need of making the quantities part of the contract. He had not adopted that course. Builders tendered on drawings and specifications, and on an invitation on which the quantity surveyor was specifically named, and they knew they were fully protected. Variations were measured up at the end.

Mr. P. E. Pilditch said he did not feel able to go the whole way with the author, for his paper, generally speaking, was rather a plea for greater consideration for builders on the part of architects. As an architect, his experience was that builders, as a rule, were not always the injured innocents that the author seemed to think them. Builders were usually well able to take care of themselves. The plea for less stringency in building contracts as against a builder was one which carried a certain amount of weight, but in view of the fact that the builder had power to protect himself by refusing to sign any contract which he considered contained onerous clauses he did not see the point of some of the author's remarks. Builders very frequently refused to accept clauses which they considered onerous, and sometimes those clauses were altered and the work went on, and what there was to prevent builders adopting that course he did not know. In some of the matters referred to by the author he agreed that an injustice was sometimes done to the builder, as when the onus was laid upon the builder by the contract for practically all building risks, and for inaccuracies in plans and specifications. Of course, the builder could protect himself, for he was not obliged to accept a contract, but it was unfair on the part of any architect to ask a builder to accept a contract drawn in such a form. As to the great difficulty in settling questions of extras and omissions in the final settlement he had not heard any reference that evening to a system of settling such points which did not involve serious difficulties, viz., when an order was given for an extra or omission, to settle the amount then and there. That was the method he adopted, and he did not find any difficulties arise out of that method, though there was sometimes a difficulty in getting a builder to do it when he was unfamiliar with the system; a second time, and there was no difficulty, and a great many troubles at the end of the work were obviated. How was an architect to know what the ultimate cost of a work was to be unless some such system were practised? One cause of difficulty between the architect and the client was that extras were allowed to mount up and a much larger sum had to be expended than the client contemplated. As to the question of the arbitrator, that was fully dealt with at a previous meeting, when the consensus of opinion was that, as to all ordinary matters arising during the course of execution of works under a building contract, the only proper arbitrator was the architect, for he alone could know all the minutiæ of all small points, and he alone had the power to reject or pass work; but that with regard to the more important class of questions which might turn upon the construction of the contract itself, or upon such questions as time and the like, it was sometimes desirable to appoint an outside arbitrator. As to the case recently decided, and mentioned by the author, in which the Master of the Rolls decided that a particular clause in a contract gave an architect no relief as against a claim of the client in a question of negligence, the decision was an excellent one, and was likely to have very good results. As to the question referred to by the author about carelessness sometimes shown in drawing up contracts, where there were contradictory or overlapping clauses that often was due to the fact that there were usually two parts to a building contract—the contract proper, and what often became the most important part of the contract, viz., the long string of conditions. Discrepancies, where they occurred, were often between one clause of the contract proper and in one clause of the conditions.

Mr. H. T. Steward said that care should be taken that the matter was looked at from the same standpoint, for one is too much inclined to think of those conditions of contract with which one was familiar; but contracts differed very largely, and most litigation arose on the individual wording of each particular contract. The building contract for architects and builders was that which had been arranged between the Institute of Architects

and the Institute of Builders, and as far as he knew it had worked very well, and the objections which had been taken thereto could easily be overcome, as for instance, that in regard to the arbitrator to be appointed. It was quite easy to put the pen through that clause and appoint A or B instead of an architect. A good many of the cases referred to by the author were hardly to be considered in connexion with building contracts; they had much more relation to engineering contracts. In an engineering contract it was usual for the engineer to be appointed sole arbitrator and judge, and so long as contractors were willing to sign such contracts he did not see that any one else had any right to object. It had been said that the specifications were sometimes incomplete—this was undoubtedly true—and sometimes there was no specification at all; but that was not hard upon a builder; it meant labour for the surveyor, but that he was generally willing to undertake. After alluding to some of the legal cases that had been cited, he said: In an ordinary contract between a building owner, or a corporation or board, and a builder, there was no reason why quantities should not be made part of the contract if the architect were an honourable man, as most architects were, and if the surveyor were equally honourable and capable as, with few exceptions, they were. One of the main causes of extras was that in a great many cases a client did not make up his mind; but where he had done so, and where things had been fully considered and formulated and put into plans and specifications, he saw no reason why there should be any large amount of variations, extras or omissions, except in the case of foundations, which were always difficult to deal with. A building owner ought to know before work was commenced pretty well what he would have to spend, and there ought not to be much in the way of extras. It used to be the custom when a surveyor prepared bills of quantities to make a copy of the drawings from which he prepared them and a copy of the specification, and when the contract was signed, the architect, builder, surveyor, and building owner all met together and the surveyor handed over to the builder the copies he had made. That was a protection to the builder, and it might be regretted that the custom had fallen into disuse. In those days the builders appointed the surveyor, but that was rarely done now, he believed, except in the Office of Works contracts. He saw no reason why there should not be a return to the old custom.

Mr. C. J. Mann said he had always felt that accuracy of quantities was the great point to be arrived at, and, having secured that, one did not care whether quantities were part of the contract or not. If they were made part of the contract, that seemed to be offering encouragement to inaccuracy, and taking out the quantities in a hasty and careless way. The settlement of the amount of extras and omissions was not a difficult matter when the quantities had been accurately taken out. He differed from Mr. Pilditch that each order for variations should be settled at the time the order was given. It was difficult to tell the full scope of the differences to be adjusted until the work had been executed, when additional work could be better dealt with than at the time the order was given. He thought it would be a great deal better in many cases if arbitrators were surveyors, and not men who had anything to do with a particular contract.

Mr. A. Harston said it had not been stated that the conditions suitable for one contract were not suitable for another. The conditions suitable for a 1,000*l.* a villa were entirely different from those of a 300,000*l.* asylum. As to Mr. Lovegrove's remark that in a particular case a surveyor was not paid for his quantities, that was the fault of the surveyor for not having a proper contract with the corporation. A professional man who had a contract with a corporation should have it under the seal of the corporation, for only in that way could the corporation be bound. As to the good old practice of the quantity surveyor taking copies of drawings and specifications, every one would admit that after quantities were taken out not a single line should be added to the plans: to add anything was utterly dishonest; and if a surveyor took a copy of the tracings he had something to compare with the original drawings, which afforded protection to himself and the builder. Public bodies were becoming very knowing, and sometimes when they engaged an architect they would not agree to the engagement of a surveyor to do part of the architect's work. If an architect were incompetent to write out a proper specification, he must get some one to do it for him; but it was a wrong practice for one man to do the work of another unless properly paid for it. He had never had any difficulty in settling omissions and extras, but he wrote his own specifications. Arbitration might be desirable in one case and not in another; and there were various kinds of arbitration. Take the case of the rejection of materials: in some contracts it was arranged that no arbitration was to be held until the end of the work; but there were objections to that, for all sorts of unknown claims were saved up against the client and the architect until the end of the work. But that objection had been got over by the lawyers by a provision that no arbitration was to be held on the quality or rejection of any materials unless notice at the time of the rejection had been given to the architect and the architect communicated it to the client. By that means all the necessary evidence could be got together for the purpose of the arbitration. It was suggested in the paper that it was pleasing to the employer that the bill of extras should be cut down at the builder's expense. He had known architects who had a large bill of extras from the builder, slash it about in red ink and let the client see it as evidence of what the architect had saved him, a process which he personally much deprecated. During a long practice his experience was that if the work was properly considered from the commencement, and the measurement and adjustment made immediately after completion, the troublesome extras would be but few and be easily settled.

The vote of thanks having been agreed to,

Mr. Blake, in a brief reply, said he certainly did not hold a brief for builders or anyone else. As to the method referred to by Mr. Pilditch, he could not see any advantage to be gained by it.

The Chairman said that a Committee of the Institute of Architects had, he hoped, arranged with the Institute of Builders what is to be the standard contract for some time to come. What had been said that evening called special attention to the importance of thoroughly considering the conditions of contract to find out whether all the clauses are absolutely applicable and what clauses should be varied for the particular building for which the contract was to be applied.

The meeting then terminated.

The annual and concluding meeting of the session will be held next Monday.

ARCHITECTURAL SOCIETIES.

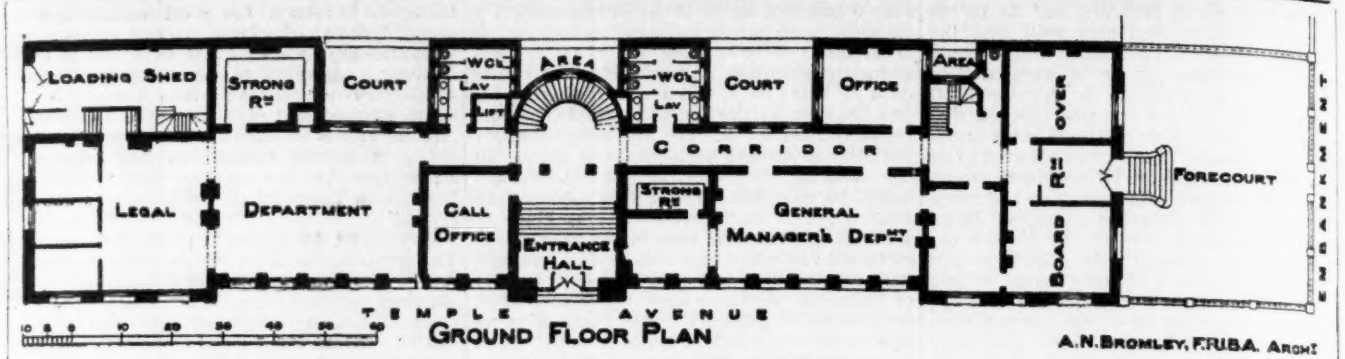
SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The annual report of the Society refers with regret to the death of Mr. Flockton and of Mr. E. Winder; the latter had been a Fellow since the formation of the Society. The number of members is at present 110. Visits were paid during the session to Derwent Hall and to the new waterworks at Langsett. The York Society having expressed a wish that the Sheffield Society should pay them a visit, it is hoped that this may be arranged in June. Among other matters of interest in the report, it is stated that the Council of the Society have devoted a considerable amount of time to negotiation with the Sheffield Master Builders' Association with regard to the proposed condition of contract, and the result of the communications which passed between the Society and the Master Builders is summarised at some length, but the matter has not yet been brought to a satisfactory conclusion. In regard to the labour question, a deputation of the Yorkshire Federation of Master Builders attended a special meeting of the Council in May of last year, and desired a recognition of the following principles of trade, viz:—

1st, "That foremen shall not be compelled to be members of the workmen's unions."
2nd, "That unionist workmen shall not refuse to work along with non-union workmen."
3rd, "That the number of apprentices shall not be arbitrarily limited."
4th, "That boards of conciliation, consisting of equal numbers of masters and operatives, for the settlement of building trades' disputes, shall be established and accepted by both masters and operatives."

The Council then unanimously agreed: "That this Council approve of these principles of trade, and in view of the great increase in the cost of building, the large amount of inferior workmanship constantly met with, and in the increasing difficulty of obtaining good and satisfactory workmanship, the Council will heartily sympathise with any wise and well-directed efforts on the part of the masters to obtain a natural recognition and practical acceptance by the master and operative builders in Yorkshire of the principles above stated."

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual report of the Northern Architectural Association shows that the Association now numbers 54 members, 68 associates, and 51 students, making a total of 173. The Report records various excursions to places of interest made during the year. The attendance at the Students' Sketching Club meetings is on the increase. A letter from the President, Mr. W. Glover, under date January 23rd, is printed in the Report, in which that gentleman, after expressing a very kindly interest in the Students' Social Gathering, which he was prevented by illness from attending, said that if the students thought of forming a class to meet and sketch designs of given subjects, he should be glad to offer a prize for the best sketch. The President had already undertaken to add second prizes for winter sketches and measured drawings.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of the Devon and Exeter Architectural Society was held at Exeter on Saturday last, under the presidency of Mr. C. King. The annual report was read by the Hon. Secretary. There had been an increase of ten members during the year. The balance-sheet showed a satisfactory financial state. The members and officers of the Society were thanked by the retiring President (Mr. King, Plymouth) for the cordial support they had given him during his year of office. The President said: "I take as my text 'The permanency of our work and its influence for good, or otherwise, upon the public mind.' The profession, in my opinion, has a hopeful future if we rightly use the inheritance which is ours to-day. The great enemy of our profession in the provinces has been in the past the slight knowledge the general public has acquired of the true principles of beauty in architecture, chiefly owing to the local dearth of that which is beautiful, the few sources of education and inspiration, and the resting satisfied with comfort or convenience, however barren the art. But the professional and non-professional educator is abroad to-day with cheap and good illustrations of the beautiful and admirable in architecture, painting, and sculpture, and these, in addition to the travelling facilities provided for visiting places of interest all over the world, must exercise an influence for good and create a desire for better results. I am a firm believer in the refining influence upon character of the beautiful in art, and if we once thoroughly realise that our work is to be permanent, not merely a question of so many pounds, shillings, and pence earned to-day, but to be seen, enjoyed, and admired, or condemned, by present and future generations, exercising upon them a refining and elevating influence, or the contrary, we have an ennobling ambition encouraging us to careful study, thoughtful application, and a giving of our best, not restricted by the value of our fees. Many of us are probably discouraged when we find how few, if any, opportunities come in our way for distinguishing ourselves, or showing what we can do; but I, for one, am not prepared to give honour only to those who have designed and erected noble and beautiful ecclesiastical, Imperial, municipal, or other buildings of a public or private character, but rather to the man who, utilising the means, however small, placed at his disposal, exercises his talents successfully. It is not what we might have done if ten thousand pounds had been placed at our disposal for some building upon which only five thousand could be spent; but have we succeeded with the smaller sum as far as it would go, and realised a building answering in all respects to the purposes for which it was erected? The pleasure we ourselves enjoy in the various beauties of our ancient buildings should be a strong inducement to us to hand down to posterity a heritage which shall at least bring credit, and not shame, upon our generation of architects. That this refining influence of the beautiful in art is not a sentiment, but a fact, was brought home to me very strongly some years ago when visiting the



National Telephone Head Offices.

Barnwood House Asylum for lunatic patients. Being shown over the house by the medical superintendent, one of the greatest living authorities on lunacy, I was struck by the air of refinement and culture which seemed to permeate the building, and especially so in the large music-room and theatre. For perfection of proportion and the refined taste in the decoration, the room surpassed anything of the kind I had ever seen, and on giving expression to my surprise and admiration, Dr. Needham said that the refining influence upon the patients of beautiful surroundings was so great that no outlay, however lavish in this direction, was extravagance; and that even in the matter of a simple plaster cornice the best artists in London were engaged for the work. What a noble profession is that of architecture if such be the benefits arising from its perfect consummation, and how great are our responsibilities to cultivate and perfect the talent which is given us to use for the benefit of others. We are told that we learn more from our failures than from our successes; certainly it is not an easy matter to be rid of them, for they are constantly staring us in the face. We may certainly learn much from the one or the other; but our duty is to learn, not to rest satisfied with successes or be discouraged by failures, but to aim higher and still higher, ever bearing in mind the permanency of our work and the effect, good or bad, it will have upon the minds and characters of those who are influenced thereby." A vote of thanks having been unanimously passed to Mr. King, the following were elected:—Mr. C. J. Tait, President; Mr. H. G. Luff (Devonport), Vice-President; to fill vacancies on the Council, Mr. B. P. Shires (Plymouth), Mr. James Jerman (Exeter), Mr. A. S. Parker (Plymouth), Mr. A. Thorne (Barnstaple); Hon. Treasurer, Mr. O. Ralling; Hon. Secretary, Mr. Harbottle Reed.

LIVERPOOL ARCHITECTURAL SOCIETY.—The annual general meeting of the Liverpool Architectural Society was held on the 21st inst. at the Law Library, 41, Castle-street. Mr. E. A. Ould (President) occupied the chair. A discussion took place on the advisability of the Society becoming incorporated. A resolution was eventually passed that the incorporation be proceeded with, and that the Council be instructed to draw up a memorandum and articles of association to be submitted to a general meeting. The report of the Council, read by Professor F. M. Simpson, showed that there were 134 members, as compared with 131 last year. The number of Fellows was fifty-four, Associates forty-seven, students fourteen, and hon. members nineteen. The meetings during the session had been highly successful, and the discussions that followed the papers read had been very well sustained. Financially, the Society was in a better position now than ever. An encouraging report of the library was also read, showing that some very useful books had been, and were being, added. The Treasurer's report was a satisfactory one, giving on the whole accounts a balance of 163*l.* 7s. 7½d. The reports were adopted. Professor Simpson was elected President for the ensuing year. The following officers were then elected: Messrs. J. Woolfall and P. C. Thicknesse, Vice-Presidents; Messrs. Arnold Thornely and F. E. P. Edwards, Hon. Secs.; James Dod, Hon. Treasurer; Mr. J. W. Blakey, Hon. Librarian. A Council was also elected. Mr. E. A. Ould then delivered a closing address, which we hope to be able to print in our next issue. A hearty vote of thanks accorded to Mr. Ould for his paper, and for his services as President during the past year, concluded the proceedings.

Illustrations.

NEW BUILDING FOR THE EASTERN TELEGRAPH COMPANY.

THE elevation illustrated shows the building in course of erection for the Eastern Telegraph and associated companies when extended to London Wall. This corner will be opened out by a large segmental curve, which should much improve the access to London Wall.

In this design the idea has been to symbolise as much as possible the work and scope of the important companies that are to occupy the building—hence the frequent introduction of spheres and globes and other geographical and electrical insignia.

The same idea is suggested for the hall, where the sculptured frieze will represent the work of the Telegraph Companies in the different parts of the globe.

The emblems of the different companies are produced in the leadwork of the dome, which is surmounted by an armillary globe supported by appropriate figures.

The principal entrance will be in the centre of the building, and communicating with the principal staircase occupies two stories, and consists of a deeply-recessed arch, which will be filled up by a glass and metal screen, with a marble entablature supporting two sculptured figures representing "Electricity" and "Engineering."

On each side of the staircase on each floor is the main corridor leading to the several offices, and lit by spacious areas in the centre of the building.

The ground-floor story will be in granite, and the whole of the superstructure in Portland stone.

The architect is Mr. J. Belcher, A.R.A. The drawing is exhibited at the Royal Academy.

NATIONAL TELEPHONE HEAD OFFICES, VICTORIA EMBANKMENT.

THIS building, which is now approaching completion, is situated at the corner of Temple-avenue and Victoria Embankment, London, and provides for the Company's large staff of officials and clerks.

Every effort has been made to obtain as much accommodation in the roof as possible, to provide for the rapidly increasing business of the company, and to secure this object a high pitched roof was necessary.

The building has been designed with the special object of securing a large proportion of window space for light, as the architect considers that classic buildings are often deplorably deficient in this respect.

The building is faced in Portland stone throughout, and is fitted with all modern improvements in the way of lifts, heating, ventilation, sanitary appliances, &c. The figure subjects, which have been executed by Mr. Gilbert Seale, are designed to illustrate the uses of the telephone.

Sufficient projection could not be obtained for the circular oriel windows facing Temple-avenue, and they are now executed of rectangular design, similar in treatment to the octagonal oriel window overlooking the Embankment.

The work has been carried out by Messrs. Foster & Dicksee from the designs of Mr. A. N. Bromley, architect, of Nottingham.

SOUTH LYCHET MANOR, DORSET.

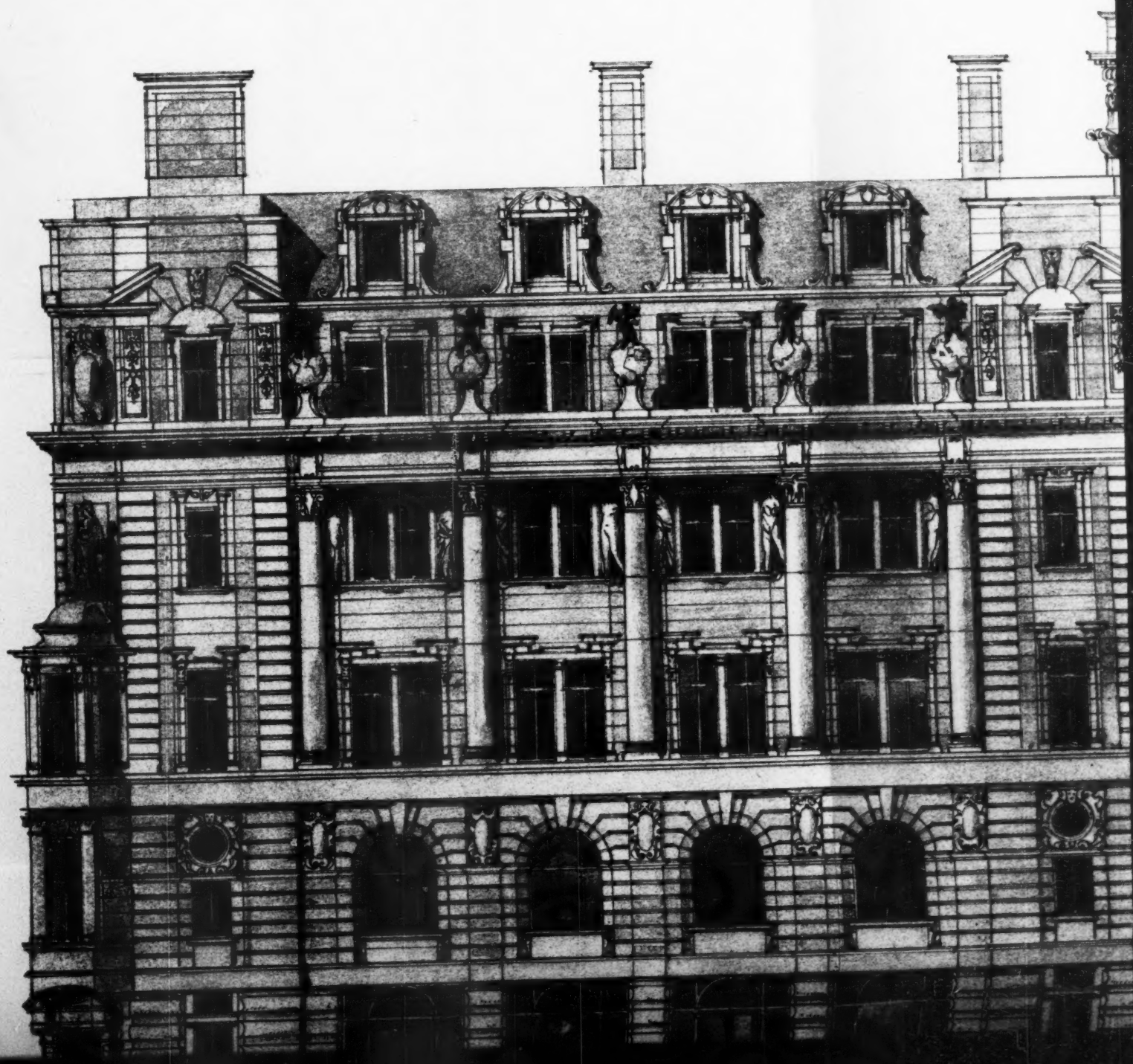
SOUTH LYCHET MANOR, the seat of Sir Elliott Lees, Bart., M.P., now commanding the Dorsetshire Yeomanry in South Africa, consists of a stuccoed house erected in part at the beginning of the century and in part later. A new central hall and staircase and other alterations in the planning were effected about eight years ago, and illustrated by a drawing in the Academy.

The present scheme shows a considerable enlargement and an entire reconstruction of the exterior in Ham Hill stone, the whole of the portion shown in the drawing being new. The architect is Mr. W. D. Caröe. The drawing is exhibited at the Royal Academy.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—This Association will hold its annual congress this year at Leicester, by the invitation of the Mayor, and in co-operation with the Leicestershire Architectural and Archæological Society. The meeting will commence on Monday, July 30, and end on Saturday, August 4. The general programme will be issued shortly, and day-by-day programmes will be published during the Congress. Amongst the places of archæological and historical interest in Leicester and the surrounding districts, the following will probably be visited, viz.:—Bradgate Park, Kirby Castle, Ulvescroft Priory, Market Bosworth, Stoke Golding, Lutterworth, Belvoir, &c. Leicester itself is so full of interesting memorials of the past that one whole day, and parts of the opening and closing days, will be entirely devoted to the examination of the antiquities of the town. It has also been arranged that the annual meeting of the Leicestershire Architectural and Archæological Society shall take place on one of the days during the week; on which occasion that Society will join the Association, and their excursion will form one of the items in the week's programme of the congress. Further particulars may be obtained on application to the Hon. Secretary, Mr. Geo. Patrick, 16, Red Lion-square, London, W.C.—At the evening meeting on the 16th inst., Dr. W. de Gray Birch in the chair, Mrs. Day exhibited some old engravings mostly relating to Gloucestershire, and some photographs of Coxford Priory, illustrative of the paper by the Rev. H. J. D. Astley on "Two Norfolk Villages," read by him at a previous meeting. Mr. Andrew Oliver exhibited a miscellaneous collection of antiquities recently found by him in an old bag. Mr. Bamford brought, to illustrate the paper of the evening, some very charming pen and ink drawings of Barking and the neighbourhood. The Rev. W. S. Lach-Szyrma then read a paper upon "The Site of London beyond the Border One Thousand Years Ago." That vast region, comprising Stratford, Plaistow, East and West Ham, Barking, Woodford, Walthamstow, now a huge city larger and more populous than Rome or Amsterdam, or many other Continental capitals, was 1,000 years ago a vast primeval European forest, with the little rills of Barking, Stratford, and perhaps Wanstead, Walthamstow, and Ilford, in the forest clearings. The wolf, wild boar, and other savage animals abounded. Most of the human population in this wild virgin forest of Essex probably was collected either at Barking around the Abbey, or at the fords on the Roman road. Stratford-atte-Bow marks by its

NEW : BUILDINGS : FOR THE : EASTERN : TELEGRAPH : COMPY LTD



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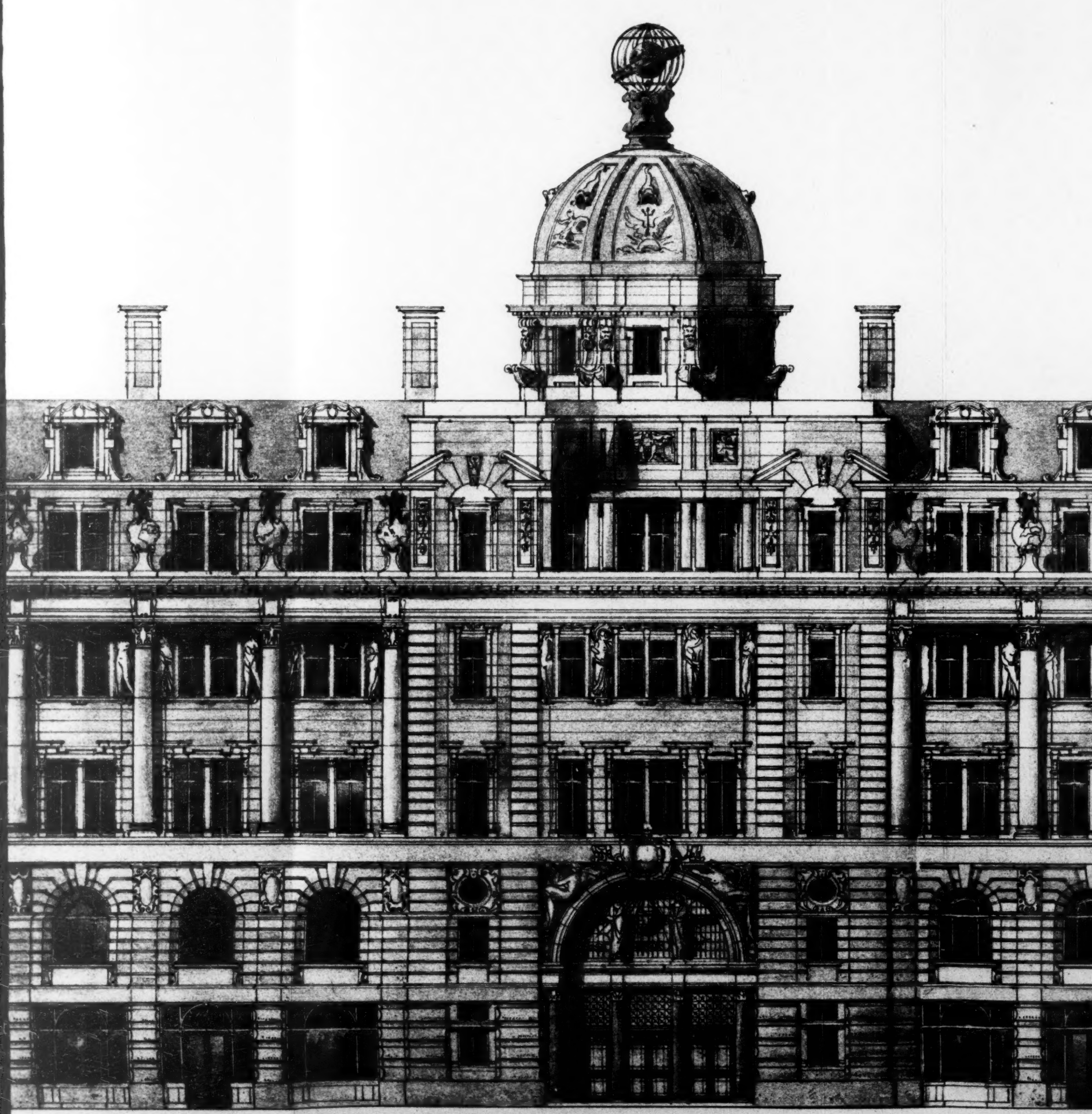
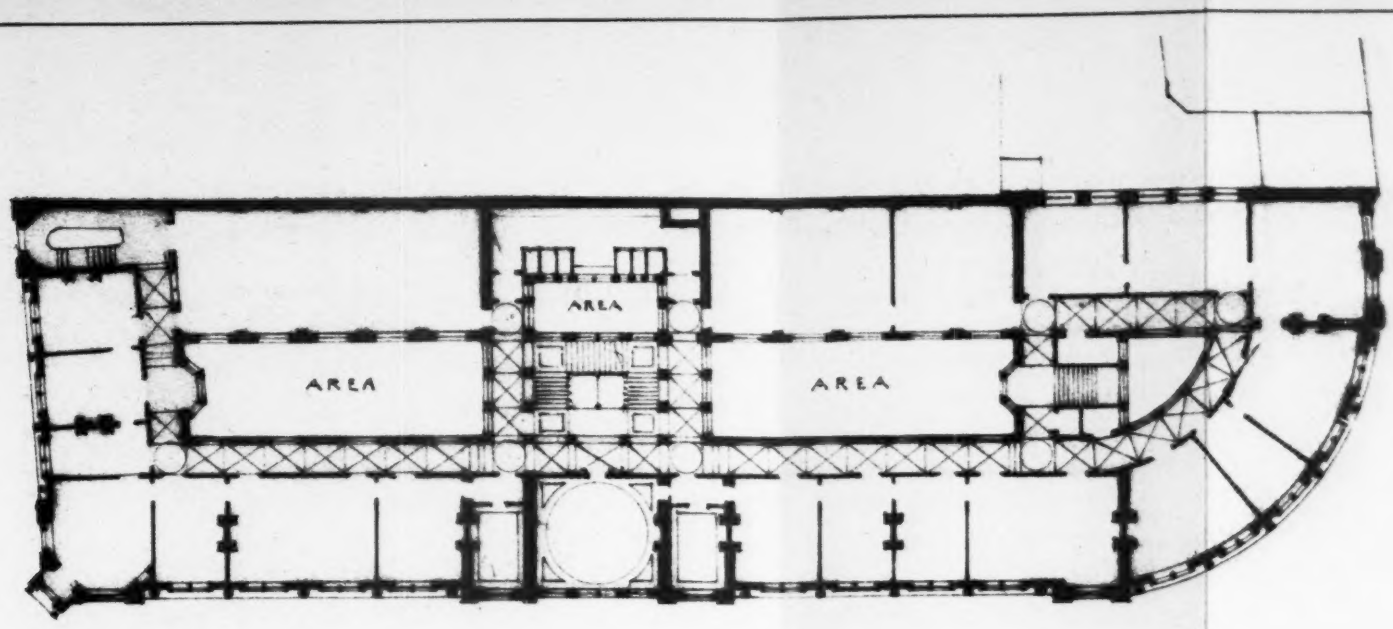


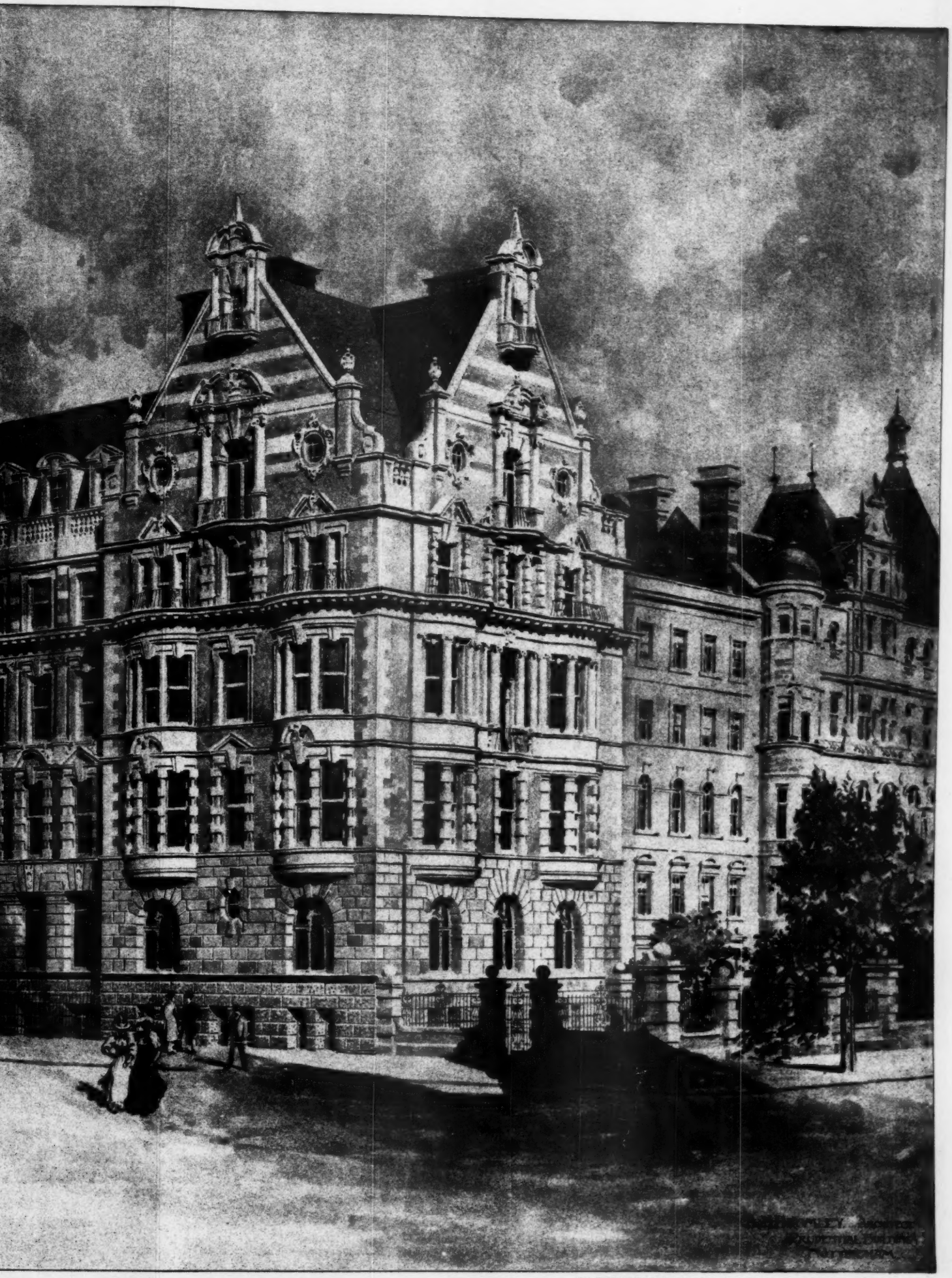
ELEVATION : IN : FINSBURY : PAVEMENT



PLAN OF PRINCIPAL FLOOR.

John Belcher A.R.A

NATIONAL TELEPHONE HEAD OFFICES, VICTORIA EMBA

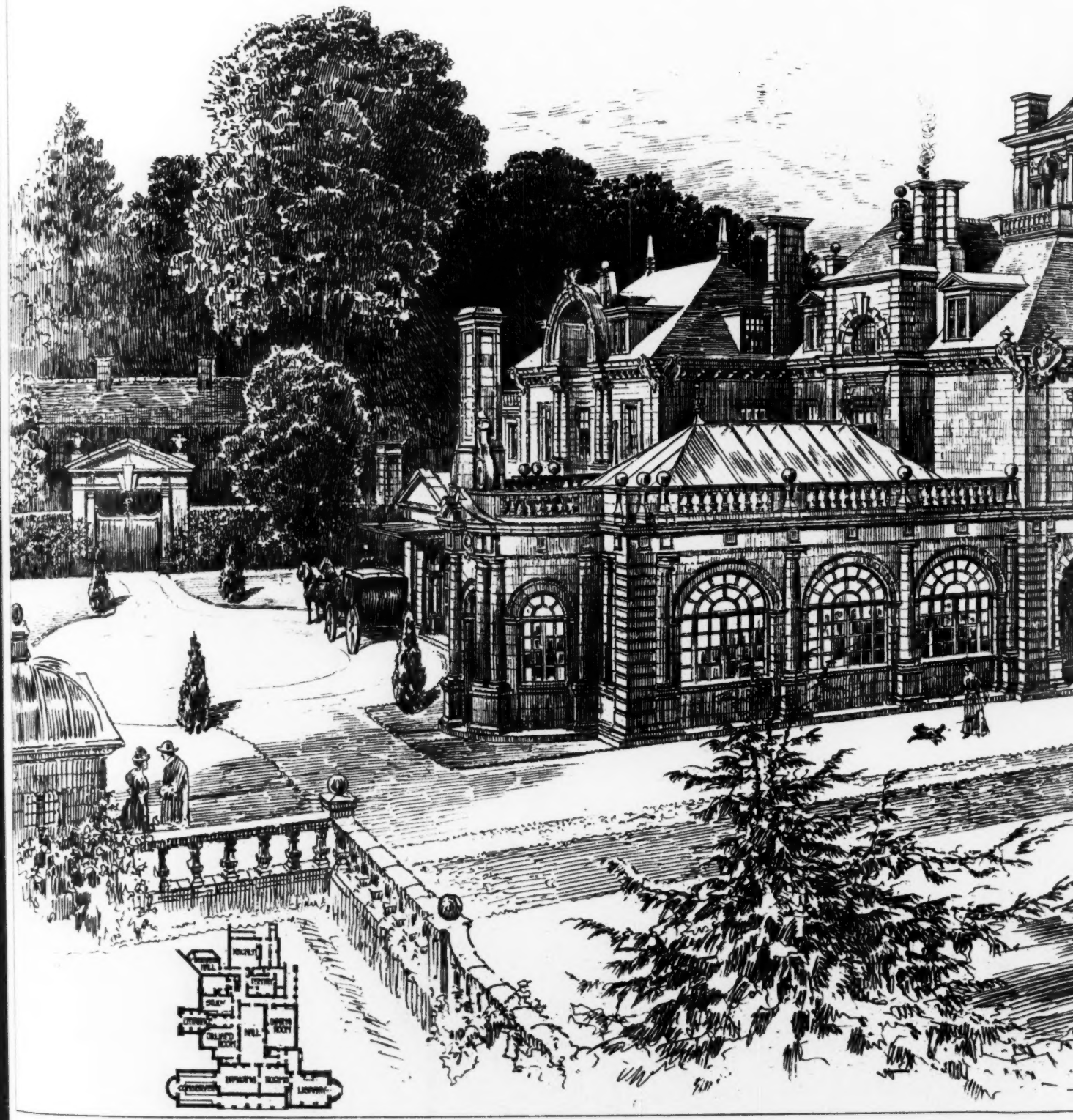


INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

RIA EMBANKMENT.—Mr. A. N. Bromley, F.R.I.B.A., Architect.

~ SOUTH LYTCHET MANOR ~ DORSET ~

W·D·CARÖE ~ ARCHITECT·



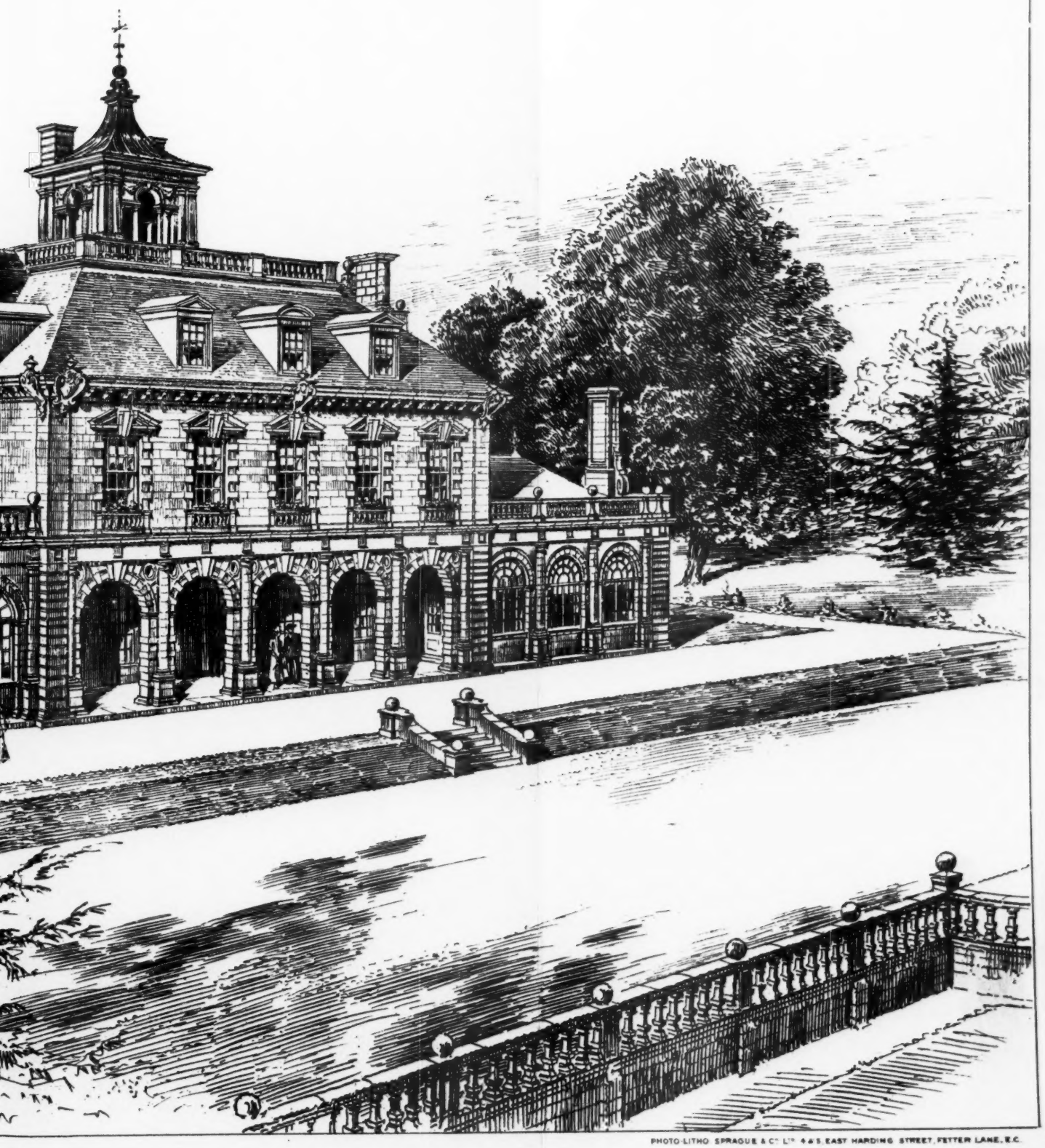


PHOTO-LITHO SPRAGUE & Co LTD 44 & 5 EAST HARDING STREET, FETTER LANE, E.C.

name where the Stanestreet road reached the Lea, and Ilford, the dangerous ford, the bad ford, where it crossed the river Roding. Probably there may have been a few huts at each place. There appears to have been another ford two miles north of Ilford, where, at Hatton corner, in digging a quarry some 300 fragments of Roman remains were discovered in 1893, and amongst these were a mortarium and an amphora. These remains probably marked the site of a small military station guarding the fords near Wanstead. In early Saxon days Barking was the chief place of the district, and the only one of importance. The Abbey of Barking, founded in 666, is sometimes said to have been the oldest convent for women in England. In Cornwall, however, which, though now an English county, was in olden days, according to the testimony of old writers, outside the kingdom of England, Mr. Lach-Szyrma thought there were traces of nunneries of an older date than Barking. The establishment of Barking Abbey is, however, a definite historic fact. There are doubtless no remains now existing of the Abbey of that early day; it and the monastic buildings were most probably of wood. Barking Abbey was burnt by the Danes in 870, and 1,000 years ago it lay in ruins. The Abbey was rebuilt by King Edgar, and its later history is connected with some of the most interesting and important events in the annals of England.—An interesting discussion followed the paper, in which Archdeacon Stevens, Dr. Winstone, Mr. Gould, and others took part. Referring to the well-known lines of Chaucer, quoted in the paper, to the effect that the Prioress spoke French—

"After the school of Stratford-atte-Bowe,
For French of Paris was to hire unknowe"—

the Chairman said there was probably a colony of French settled at Stratford engaged in some handicraft, like the Spitalfields weavers. The last meeting of the session will be held on June 6, when a paper by Mr. Cæsar Caine is promised on "The Archiepiscopal Mint at York."

THE BUILDING TRADES GIFT.

WE are informed that building operations were commenced at Bisley on Wednesday last. The funds collected now amount to 20,000*l.*; 6,000*l.* more is required to complete the accommodation for one hundred men. All offers of assistance, whether in money or in kind, should be addressed to the Executive at Waterloo Place, Pall-Mall.

We are asked to announce the following additional contributions:—

Subscriptions.

	£	s.	d.
The Derby Master Builders' Association (per Mr. A. Wright, being the proceeds of a concert)	50	0	0
The Carpenters and Joiners of Wolverhampton (per Mr. W. Vincent Vale)	29	16	1
Workmen of Messrs. Dent & Hellyer	7	11	6
Workmen of Messrs. Jas. Styles & Son	5	6	6
Messrs. Jas. Styles & Son	5	5	0
Messrs. James Day Burchett, Limited, Ealing	5	5	0
Mr. T. D. Graty, Bromley, Kent	5	5	0
Mr. Lansbury, Bromley, Kent	5	5	0
Messrs. Peill & Sons, Bromley, Kent	5	5	0
Messrs. Darby Brothers, Bromley, Kent	2	2	0
Mr. G. Lovelock, Beckenham	2	2	0
Workmen of Mr. William Willett, Chelsea	2	2	0
Mr. William Blackburn and Workmen	2	1	0
Workmen of Mr. William Willett, Chelsea (and donation)	1	19	3
Workmen of Messrs. W. H. Lorden & Sons	1	17	6
Workmen of Mr. H. Lovatt, West Kensington	1	14	0
Workmen of Messrs. Whitechurch & Co.	1	13	6
Mr. Edmund Woodthorpe	1	1	0
Workmen of the Broseley Tileries, Broseley	1	0	6
Mr. Thomas Jones, Liverpool	1	0	0
Workmen of Messrs. Ernest Mathews & Co.	1	0	0
Workmen of Messrs. Roberts & Robinson, Limited, Liverpool	0	15	6
Mr. W. B. Tuteur	0	10	6

Gifts in Kind.

Messrs. Wheeler & Co. (Tilehurst, Reading) (per Mr. G. Montgomery, *British Clayworker*).—10,000 red facing bricks.

The Tibbington Brick Company, Limited (Tipton, Staffs.) (per Messrs. Wood and Ivery).—5,000 fire bricks.

Messrs. Peter Wood, Limited (West Bromwich) (per Messrs. Wood & Every).—5,000 blue bricks.

The Hockeley Hall and Whateley Collieries and Brickworks, Limited (Tamworth) (per Messrs. Wood & Ivery). 5,000 blue bricks.

Messrs. Williams Brothers & Co. (Chester).—The cathedral glazing for the church.

IRON HUTS ON SALISBURY PLAIN.—Mr. John McManus, iron buildings manufacturer, has received the contract from the War Office for the erection of 300 iron buildings and offices on Salisbury Plain, for the accommodation of troops. Are these to be permanent?

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring-gardens, Alderman W. H. Dickinson, Chairman, presiding.

The Paris Exhibition.—The General Purposes Committee reported:—

"At the meeting of the council held on 6th February last a question was asked as to whether arrangements could be made by the council to afford assistance to skilled mechanics to visit the Paris Exhibition, and the matter being brought to our notice, we informed the Technical Education Board of the question raised. We have now received from the board a memorandum stating that the solicitor is of opinion that expenditure by the board in assisting skilled mechanics as suggested could not be justified."

Water Bills.—The Parliamentary Committee laid before the Council a long historical report as to the Bills promoted by the Council for the acquisition of the undertakings of the Metropolitan water companies. The Council had used every effort to obtain, in the interests of the ratepayers and water consumers of London, a settlement of the question, and for this purpose had expressed its willingness to modify the proposals contained in its Bills. But it found itself once more opposed by the Government at the stage of second reading, and debarred from even discussing its modified proposals before a Committee of the House.

Tramways.—It was agreed that a notice should be served on the London, Deptford, and Greenwich Tramways Company, requiring the company to sell their undertaking to the Council. A similar resolution was passed in respect of two and a quarter miles of the South London Tramways Company's undertaking.

Replying to questions, Mr. Benn said the Highways Committee would consider the question of trying to acquire the whole of the undertaking of the South London Tramways Company. As to bringing tramways over Westminster Bridge, he thought the Government would oppose such a thing.

The Highways Committee recommended, and it was agreed, That the Parliamentary Committee be instructed to include, in one of the Bills to be promoted by the Council next session, powers for the Council to double, with the consent of the Board of Trade, single lines of tramways (1) in any thoroughfares which are, or may hereafter be made, sufficiently wide for the purpose, and (2) in streets where, if the existing single line were doubled, the statutory width of 9 ft. 6 in. could not be given between the outer rail and the kerb, provided that no objection be raised by the frontagers interested.

The following recommendation, contained in a subsequent report of the Committee, was agreed to:—

"That, as regards contracts for the supply of the rails, fish-plates, &c., required in connexion with the reconstruction by the Council of existing, and the construction of new, tramways, the operation of the Council's standing order No. 212 be suspended so far as to permit of the omission of the usual clauses relative to hours and wages, and the insertion of a special clause as follows:—'All wages to workmen for work executed under this contract must be paid at the rates arranged between the employers and workmen in the rail trade in that part of the country where the order is placed. The Council reserves power to cancel this contract, so far as relates to any part of the articles specified therein not totally or partially manufactured, at any time on one week's notice, should it be proved to the satisfaction of the Council, after hearing both parties, that lower rates than the standard rates of the district have been, or are being, paid in the execution of this contract.'"

Waterloo Station Extension.—The Improvements Committee reported as follows:—

"By the South-Western Railway Act, 1899, the London and South-Western Railway Company are empowered to extend Waterloo station and to execute further works to their line. By Section 8, Sub-Section 1 of the Act, the company are required to construct a new road, of the width and in the position shown in blue colour on the signed plan, to form an approach road from Waterloo-road on the one hand and from Westminster Bridge-road on the other hand, and also from Lower Marsh to Waterloo station as proposed to be enlarged in pursuance of the powers of the Act; and the company are also required to widen the southern end of York-street between the said new approach road and Lower Marsh. The company have now applied for the Council's approval to an amended plan which provides that the new road, instead of descending with a steep gradient at its eastern end into Waterloo-road shall remain at the station level, thus providing a flat road for a distance of 660 ft., instead of 350 ft., and also a turning place for vehicles at the eastern end. In substitution for the approach from Waterloo-road, the amended plan provides for a new road, 50 ft. wide, to lead from Lower Marsh at Lancelot-street to the station as proposed to be enlarged. The gradient of this new road will be 1 in 20, as compared with 1 in 18, the gradient of the approach from Waterloo-road as originally proposed. The gradient of the approach from Westminster Bridge-road, as shown on the amended plan, will be 1 in 25, as compared with 1 in 20, the gradient of the approach shown on the signed plan. The width of the proposed new roads varies from 40 to 60 ft., whilst the width shown on the signed plan varies from 45 to 70 ft. The amended plan, like the signed plan, provides for an entrance to the station from York-road, which is to be widened. From the point of view of the public traffic, we consider that the modifications suggested by the company are advantageous. The gradients are improved; the substituted approach road from Lower Marsh will overcome the disadvantages which would result from a road with a steep gradient delivering the station traffic into Waterloo-road at the tramway terminus; and the flat road proposed by the company will also lend itself to any possible future extension along the eastern side of the station. We are satisfied that by the adoption of the amended plan the Council's interest will be secured substantially in accordance with the signed plan, which received the approval of the Council during the passage of the company's Bill through Parliament in the session of 1899; but we are of opinion that an increased width should, if possible, be provided for the new street from the junction with Lower-marsh at Lancelot-street to the main station road. We think, moreover, that the company should undertake to provide housing accommodation for any additional persons of the labouring class who may be displaced by the adoption of the amended scheme. We have accordingly approved the amended plan, subject to the width of the approach road from Lower Marsh at Lancelot-street to the main station road being increased, and also subject to the company given an undertaking to provide housing accommodation for any additional persons of the labouring class who may be displaced by the adoption of the amended plan. We report the facts for the information of the Council."

Main Drainage Extension.—The Main Drainage Committee reported that the following tenders had been received for the construction of the first section of the proposed new outfall sewers:—Mr. A. Woodhouse, 92,681*l.*; Messrs. J. Mowlem & Co., 95,885*l.*; Mr. James Dickson, 121,924*l.*; Messrs. Pedrette & Co., 133,606*l.* The committee recommended the acceptance of Messrs. Mowlem's tender, which, after some discussion, was agreed to.

Hot Water Supply, Mayford School.—The Industrial and Reformatory Schools Committee reported that the following tenders had been received for the supply and fixing of new hot-water tanks, pipes, valves, &c., at this school:—Messrs. G. & E. Bradley, 311*l.*; Wenham & Waters, 327*l.* 13s.; Rosser & Russell, 441*l.* 15s.; Comyn, Ching, & Co., 454*l.* 15s.; Vaughan & Brown, 1509*l.*; Clements, Jeakes, & Co., 680*l.* It was agreed to accept the tender of Messrs. G. & E. Bradley.

The Archbishop's Park.—The Parks' Committee reported that the agreement with the Archbishop of Canterbury, by which the Council undertook to lay out and manage the field next Lambeth Palace grounds as a place of public recreation, had been completed. They recommended an expenditure of 2,500*l.* towards the works necessary to fit the park for public use. The ultimate total cost was estimated at 4,646*l.*

The report was adopted.

Tenders.—The Fire Brigade Committee made the following recommendations, which were agreed to:—

That the tender of Messrs. Johnson & Co. to carry out for 283*l.* work connected with the provision of a drying closet, the laying on of hot water, and the execution of various small alterations and repairs at the Tooley-street station be accepted.

That the tender of Mr. A. Hudson to erect for 196*l.* 18s. in the yard of the Sydenham station a shed to cover a horsed escape be accepted.

That the tender of Mr. Frank Bull to execute for 198*l.* the alterations required to the Hackney station be accepted.

Having transacted other business the Council adjourned.

GLADSTONE MEMORIAL STATUE, HOUSES OF PARLIAMENT.—On the 19th inst. Sir Henry Campbell-Bannerman, M.P., unveiled a statue of Mr. Gladstone, erected in the Central Hall of the Houses of Parliament. It has been executed by Mr. F. W. Pomeroy from a block of Carrara marble. It is 8 ft. in height.

METROPOLITAN ASYLUMS BOARD.

SIR E. GALSWORTHY presided over the fortnightly meeting of this Board, held at Spring Gardens on Saturday.

Rochester House, Ealing.—A letter was read from the Local Government Board, forwarding for the managers' observation an extract from notes made in the Board's architectural department respecting plans of alterations, &c., at Rochester House, Ealing, and suggesting that in view of the short tenure of the property, the managers should endeavour to obtain a substantial contribution from the owner towards the cost of reconstructing the drainage. The Board also requested to be furnished with a complete estimate of the cost of the structural work involved, including architect's fees and other incidental charges. The letter was referred to Committee.

What is a Public Building?—The Children's Committee reported that the District Surveyor of Camberwell had served on Mr. Priestman Moses (whose tender to execute certain alterations and additions to No. 16, Elm-grove, Peckham, for 630*l.* was accepted on March 10) a notice stating that the house was a "public building" within the meaning of the London Building Act, 1894, and requiring, among other things, that the staircases and corridors be constructed of fire-resisting material. In the first instance the Committee directed the Clerk to write to the London County Council in the matter, and they now learnt that, in the opinion of their Solicitor and of the Building Act Committee, the house was not a "public building." The Committee recommended that the architects (Messrs. C. & W. Henman) be instructed to direct the builder to proceed with the alterations according to the plan approved by the Managers and the Local Government Board, and to inform him that the Managers would defend on his behalf any action which the District Surveyor might bring against him. This was adopted.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE WORK OF PROFESSOR COCKERELL, R.A.

A GENERAL meeting of the members of this Institute was held at No. 9, Conduit-street, W., on Monday evening last. Mr. E. A. Gruning (Vice-President) presided.

After the introduction of a number of Associates on their election—among them being the Misses B. M. and E. M. Charles—

Mr. J. M. Brydon (Vice-President) read a paper on the work of Professor Cockerell, R.A.

Mr. Brydon opened his subject with a brief survey of the architectural influences at work during the early years of the present century. Professor Cockerell, he said, formed a connecting link between the old order and the new. He came when the men and the methods of the Renaissance were gradually being worked out. Under Robert Adam English Classic had become somewhat emaciated, and though Chambers still upheld the principles of the Renaissance as practised in its best days, the letter of its tradition was now being neglected, if not altogether lost sight of. The English Renaissance School from Inigo Jones to Chambers, had never attempted to hide its buildings behind pseudo-Classic fronts, or to palm off Greek and Roman temples for Christian churches. Its use of Classic details was always subservient to the purposes of its buildings, and its buildings to the requirements of the time in which they were built. On the other hand, the "Revivalists" seemed to have a principle that modern purposes should be made subservient to foregone architectural styles. This distinction must be borne in mind for a proper appreciation of the efforts made by such men as Cockerell and Barry towards the elucidation of the true principles of design. These two men, conscious of the hopelessness of the path the Revivalists were pursuing, followed each the bent of his own genius, the former reverting to the Italian of the Renaissance, the latter carrying his Greek culture and refinement into the every-day work of his time. Of the notable architects of the time none had a stronger grasp of Greek detail or used it with more sympathetic expression than Playfair, or a deeper knowledge of the principles of Italian art than Barry; Cockerell, at once a great artist and a scholar, drew his inspiration from both sources, combining the adaptability of the Italian with the refinement and grace of the Greek, while through it all ran the impress of his own individuality. In Cockerell's time the battle of the styles was in full swing. The competition for the Houses of Parliament had given an impetus to the revival of mediævalism. Even Cockerell was not altogether proof against this influence, as witness his Gothic work at Harrow Schools and Chapel and at Lampeter College, done at a time when his mind was occupied with the restoration of the Roman Forum, the Parthenon at Athens, and the congenial work of designing Hanover Chapel, Regent-street.

Before noticing his works the author gave a brief sketch of Cockerell's early career. He was born in 1788, and was the son of Samuel Pepys Cockerell, a well-known architect, and surveyor to the East India Company. He was educated partly at Westminster School. His professional training was begun in his father's office, and he afterwards entered Sir Robert Smirke's office as an assistant. When in his twenty-second year he began his foreign studies, in the pursuit of which he twice thoroughly explored the mainland of Greece and its islands, returning again and again to Athens. Then he visited Sicily and Italy, staying at Naples, Florence, and Rome. On his way home he spent some time in Paris, returning to England after an absence of seven or eight years, four of which were spent in Greece. He studied incessantly, made notes and sketches and restorations, many explorations of temples and other buildings, and particularly of Greek sculpture, and generally stored his mind with the knowledge he afterwards gave to the world in his famous lectures and books and still more famous works.

At the age of thirty, he commenced his first real work, the Literary and Philosophical Institution, now the Freemasons' Hall, at Bristol, a design marked by that sense of proportion and purity of detail which became such marked characteristics of his later works. After some additions to Harrow School, and Bowood for Lord Lansdowne, came his first work of primary importance, Hanover Chapel, Regent-street. Here he distinguished himself at once by his originality of plan, design, and refinement and delicacy of detail. Though hampered by difficulties of site, the result was an artistic triumph, a veritable revelation in the adaptability of Greek art to modern purposes. It is to the lasting shame of all concerned in the transaction that this work of a great master should have been sacrificed to the craving after ground rents.

His next commission was the National Monument on the Calton Hill, Edinburgh, a work in which he was associated with Playfair, of Edinburgh, and which as originally conceived was to be a reproduction of the Parthenon, and on the same magnificent scale. The work unhappily was never completed, yet something of the spirit of the great Greek temple is visible in the fragment of the work carried out; its exquisite proportion, its beauty of detail, show how true was the architects' appreciation of the majestic original at Athens.

As Cockerell's practice increased, he engaged with more or less success in several competitions, amongst others for the Cambridge University Library and Museum. This competition partially failed and had to be done all over again. Ultimately Cockerell's design was chosen, but was never fully carried out—a matter greatly to be regretted, judging by the north wing, the only portion actually erected. The Westminster Insurance Office, now the office of the *British Medical Journal*, in the Strand, erected about this time, was the first of a notable series of buildings for commercial purposes, which, perhaps more than any others, shows the master's individuality. It has all the characteristics typical of its designer which were developed with such success in the Sun Fire Office in the City and the Liverpool and London Insurance Buildings at Liverpool, and the Bank of England building in the same city. While seeking his inspiration from Greece rather than from Italy, while clothing all with the mantle of Greek refinement rather than with the luxury of the Renaissance, he never forgot he was designing buildings for modern purposes. He bestowed much study on the masonry of his façades. The size and proportions of the stones were made to play a subtle part in the harmony of the general design. His angle quoins and rusticated courses were cunningly devised to assist the general scale and expression of his elevations. As an object lesson showing how these features may be employed with reticence, yet with power, Mr. Brydon commended to students the careful study of the Dale-street front of the Insurance Buildings at Liverpool, one of the finest pieces of design in modern Classic. The author deplored the recent alterations at the Sun Fire Office, Threadneedle-street. Recognising the difficulties the task of altering such a building presented, he considered it should have been accomplished with more regard for the work of such an artist as Cockerell. The original work might have been left alone to speak for itself, and the additions designed in harmony with it; but, as carried out, the whole of the proportions of the building had been altered.

Another worthy monument of Cockerell's skill and genius, the Taylor and Randolph buildings at Oxford, was won in a competition and carried out during the years 1841-46. This work bespeaks the artist and the scholar in every line, and proclaims the architect a consummate master of his craft. Though not a large building, it has a quiet dignity which enables it to hold its own in a city renowned for its architectural monuments. It is the architect's work at his very best. One feels the grace of its Greek refinement in proportion and in detail, the appropriateness of its sculpture and carving, the judicious contrast of plain surface and richness of effect, with all the wealth of knowledge and skill, and yet that reticence of design which goes to make an architectural work of the highest merit.

Two public buildings of the first importance left unfinished at the death of their architects were completed by Cockerell — viz., the FitzWilliam Museum at Cambridge, commenced by Basevi, and of which Cockerell completed the hall and staircase, and St. George's Hall, Liverpool, the noblest monument of the Classic revival in England, designed by the younger Elmes. Of the latter building, upon which Cockerell laboured for nearly seven years, the magnificent decorations of the great hall, the stateliness of the courts, the Doric beauty of the northern entrance hall, and the elegance of the circular concert-room on the first floor are all due to his genius. Sir James Picton describes the building as one of the greatest triumphs of art in modern times, and Fergusson speaks of it as the culminating and by far the most successful specimen of this style of art in England, and perhaps in Europe.

The author referred to important competitions in which Cockerell unsuccessfully took part, and to his designs for the Royal Exchange and the Houses of Parliament. The latter, for all its merit, the author felt bound to admit, failed to come within measurable distance of Sir Charles Barry's magnificent structure either in grasp of the subject or in plan or elevation. As regards the design for the Royal Exchange, the successful competitor, Sir William Tite, considered it one of the most remarkable works of art in connexion with architecture he had ever known. Tite and Cockerell carried out the London and Westminster Bank, in the City, in collaboration—they were the only competitors for the work, and at Tite's instance they agreed to act as joint architects, the arrangement being readily adopted by the directors. The exterior is marked by Cockerell's hand, and its characteristic style has been followed in all the extensions of the bank.

Besides being an accomplished architect and a brilliant architect, Cockerell was a learned archæologist and much of a sculptor. He drew the figure with remarkable power and expression; he managed to grasp the broad monumental style of the great Greek age—as witness his design for the pediment of St. George's Hall. Of the ornamental carving he designed, fine examples exist on the Taylor building at Oxford and on the Insurance Offices, Dale-street, Liverpool.

The author then touched upon Cockerell's literary labours, his discoveries in Greek archæology, and his restorations of ancient classic work. He was an authority on all matters pertaining to Greek art. To his energy we owe the discovery of the Ægina and Bassæ marbles, and a knowledge of the proper purpose and position of the colossal statues at the Temple of Jupiter Olympius at Agrigentum.

Numerous honours were conferred upon him in his own country and abroad. He held the Chair of Architecture at the Royal Academy for seventeen years, was surveyor to St. Paul's Cathedral, was the first to receive the Royal Gold Medal for Architecture, and was the first Architect President of the Institute. He died in 1863, and was buried in St. Paul's Cathedral

the fabric of which had been under his care for forty years.

Mr. Brydon's paper was illustrated by a large collection of photographs and drawings representative of Cockerell's chief works.

Dr. Murray proposed a vote of thanks to Mr. Brydon for his very appreciative and interesting sketch. This was the third occasion, he said, upon which a distinguished member of the Institute had reviewed the life and services of Professor Cockerell, and in time to come others would follow in their footsteps. He would like to say that in the British Museum Professor Cockerell's name was also held in very high esteem; for his bringing home the Ægina and Bassæ marbles in 1814 enabled the British Museum to take its first important step in becoming a centre of the noblest forms of Greek art instead of a miscellaneous collection of Greek and Roman sculptures. It was no fault of his that the Ægina marbles were lost to the Museum. By his personal influence, which was very great, and by his exertions, the Government of the day had undertaken to purchase these statues at any cost, and it must have been a sore trial to a man of his patriotic spirit to see them ultimately go to Munich owing to the blunder of an official employed by the British Government. He was, indeed, the pioneer of the movement which ended in putting the British Museum in the front rank. Some years ago, owing to the kindness of Mr. P. Cockerell, he (Dr. Murray) had the advantage of having in his charge in the Museum several portfolios of drawings, together with the sketch books used by Professor Cockerell when travelling in Greece, &c. Some of the drawings had been made in preparation for the publication of his great work upon the temples of Ægina and Bassæ. He (the speaker) had been told by one who spoke from experience that Professor Cockerell, always ready to take any amount of trouble when his opinion was asked on some new theory of Greek architecture, had the rare gift of making the person who had asked his opinion almost believe that he had found it all out himself. After alluding to the high opinion of Cockerell, in regard to knowledge of Greek art, which was held by Professor Boetticher, certainly one of the people most competent to judge, Dr. Murray concluded by expressing the pleasure he had in being present at the reading of this excellent paper, and moved a vote of thanks to its author.

Mr. H. H. Statham, in seconding the vote of thanks, said there was no better use to put one of their evenings to than to revive the recollection of the achievements of one of their eminent members of past days. The subject was interesting in another sense, that it carried them back to a time when architecture was viewed in a different light from now; when scholarship in Greek detail, and its application in modern work, was considered one of the highest objects to which an architect could devote himself; and if in some sense this was illogical, there was a pleasure in it which could not be denied, and it had an influence in refining taste in regard to detail. The branch Bank of England at Liverpool, referred to in passing by Mr. Brydon, he thought was perhaps the best thing Cockerell had ever done. The columnar order on the front was on a very large scale and designed with the greatest refinement of line; it might be an illogical application of the order, but it was delightful in effect. Then, round the corner, the flank was treated in a quite different way, with great arched windows with immense quoins—just giving the idea of a bank; they had the state elevation in front and the practical elevation at the side. Those were the days of the great classical stylists in architecture, such men as Donaldson and Cockerell in England and Lesueur in France; men who were full of recondite learning about the architecture of the past. That kind of architect hardly existed now; they were occupied with more practical matters. The Taylor and Randolph building suggested another thought—the importance of a great general idea in a building, quite independent of the detail. The idea of the Taylor and Randolph building, with its low centre and the two great side masses at right angles with it, might be worked out in half-a-dozen different styles of detail, but would still remain a great idea. It would be good practice, he thought, sometimes to set their students to translate celebrated buildings into other styles, treating the same idea with other detail. In regard to St. George's Hall, he thought there was some misconception as to the respective parts which Elmes and Cockerell had in it. The whole general conception of the interior was, he believed, Elmes's; in fact, in Elmes's correspondence with Rawlinson there were some remarks as to the best way of executing the capitals of the granite columns, so that Elmes must have designed the columnar portion of the interior. Mr. Brydon seemed to imply that after its commencement it was decided to make the large hall a concert hall; but it was the other way about. Liverpool had formerly a triennial musical festival, held in one of the churches; then it was thought the church was unsatisfactory, and a great hall was to be built for the festivals; but Elmes, who cared nothing about music, ignored this and merely thought of the architectural effect; he conceived the idea of the two courts being visible at the close of the vista at each end of the hall, and when he was told the organ would come in the way, he said angrily, "Do you think I designed my building as a case for your organ?" However, the organ had to be put there, and Cockerell designed the present organ case, one of the finest designs for an organ-case in modern times. He could entirely corroborate Mr. Brydon as to the excellent acoustic qualities and planning of the small concert-room, one of the best rooms for music on a small scale that he had ever been in. On the other hand, the large concert hall was probably, in an acoustic sense, the worst in the kingdom. That came of designing a building without considering the purpose it was intended for. He would call attention to another feature in the decorative design of the large hall; the bronze folding-doors or gates which formed the entrance at two or three points. Those were no doubt designed by Cockerell, and as examples of Classic metal design he knew few modern things equal to them. In the course of his paper Mr. Brydon had coupled the names of Cockerell and Barry. He had observed with regret that Barry seemed to be almost forgotten by the younger generation of architects of the present day. He hoped therefore that on a future evening some one would read a paper on the genius and works of Sir Charles Barry, to form a pendant to the excellent paper they had had that evening on Cockerell.

Mr. W. M. Fawcett spoke of the portion of the University library designed by Cockerell at Cambridge as a very striking building—particularly the internal parts. It was a small part of the extensive frontage he designed and which had never been completed, but that did not detract from the excellence of its architectural features. It was a somewhat costly building, and the tradition in Cambridge was that the space per book cost exactly ten shillings—that was to say, the building cost 30,000*l.* and would hold 60,000 books. With regard to the Fitzwilliam Museum, Mr. Fawcett pointed out that Cockerell came in after the death of Basevi. He altered the arrangement of the staircase, but it still left a bad approach to the ground floor. In going up the wide exterior steps with the colonnade at the top one had not the idea of ascent prominently before the mind, and therefore the feeling on reaching the interior and descending the stairs was that we were going below the ground level. The Fitzwilliam Museum was indebted to Cockerell for the granite columns in the hall; Basevi had used scagliola on the walls, but Cockerell insisted on granite columns, and his recommendation was fortunately carried by one vote. He was very glad to have the opportunity of expressing his appreciation of the genius of Cockerell.

Mr. Phené Spiers, speaking of the Fitz-William Museum, said that he remembered thirty years ago when Sir Digby Wyatt was asked to devise a scheme by which the galleries could be lowered, he was so struck with the beautiful manner in which Cockerell's staircase was set out that he declined to meddle with it, and it was left intact, though he (the speaker) regretted to say it had been since removed to make way for a very commonplace staircase. He mentioned also the remarkable design of the ceiling, which had hardly a real horizontal line in it; everything was slightly curved with a view to the effect on the eye.* In connexion with Cockerell's work he remembered taking Baron de Geymüller to see some of the city architecture on a day (either Saturday afternoon or Sunday) when the city was nearly empty; but on coming in sight of the Sun Fire office they saw a carriage drive up out of which got a gentleman who stood with folded arms looking at the building which they also were just about to inspect. This turned out to be the President of the Royal Academy, Sir F. Leighton (as he then was), who said that he had not seen the building for some time, and that he came to look at it now and then when he wished to revive his feeling for Greek architecture.

The Chairman said the hour had become too late for him to speak of Cockerell as he knew him when a pupil. No one acquainted with him could fail to recollect his kindliness and courtesy. With regard to the Sun Fire Office, he could not help saying that he looked upon the recent alterations and additions with great regret. It was, as Cockerell designed it, a perfect building of that type, and should not have had its architectural features spoiled by altering it and doubling its length. The chairman concluded by remarking that they were very pleased to see present as visitors that night the son of the late Professor, as also his grand-daughters and, he believed, his grandson.

Mr. Brydon, replying, observed that St. George's Hall was the outcome of two separate competitions, one for a concert hall, the other for law courts, when it was afterwards decided to combine the two. It was true that Elmes threw overboard the practical intentions in regard to the hall, and thought only of the architectural effect.

The Chairman then announced that the next meeting would be held on June 11, when the results of the election of the Council and Standing Committees would be made known.

* We have since received from Mr. Spiers an explanatory note and a sketch plan of the ceiling at the Fitzwilliam Museum. The ceiling has a circular dome in the centre and a large cove next the wall; as the compartment is not square there is a considerable flat between the cove and the springing of the dome, and it was this flat of which Cockerell thought it necessary to correct the lines to avoid an optical illusion.

GENERAL ARCHITECTURAL CONGRESS, 1900.

An Architectural Congress will be held in London during the week beginning June 18 under the patronage and management of the following general committee:—

Mr. Wm. Emerson, President R.I.B.A.; the Rt. Hon. the Earl of Meath; the Rt. Hon. Lord Windsor; the Rt. Hon. Lord Strathcona and Mount Royal, G.C.M.G.; the Right Hon. A. Akers Douglas, M.P.; Sir William B. Richmond, K.C.B., R.A.; Sir John Taylor, K.C.B.; Sir Laurence Alma-Tadema, R.A.; and Messrs. C. Purdon Clarke, C.I.E.; Alfred Waterhouse, R.A.; George Aitchison, R.A.; G. F. Bodley, A.R.A.; G. J. Frampton, A.R.A.; Aston Webb, A.R.A.; John Belcher, A.R.A.; Walter Crane; Selwyn Image, Master of the Art Workers' Guild; Rowand Anderson, Edinburgh; H. J. Austin, Lancaster; Reginald Blomfield; Basil Champneys; John Douglas, Chester; W. H. Lynn, R.H.A., Belfast; Mervyn Macartney; Ernest Newton; E. S. Prior; Halsey Ricardo; Professor F. M. Simpson, Liverpool; W. M. Fawcett; E. A. Gruning; J. M. Brydon; Alex. Graham; John Slater; H. H. Statham; Paul Waterhouse; J. J. Burnet, A.R.S.A.; Leonard Stokes; J. S. Gibson; H. V. Lanchester; Thomas Drew, R.H.A., President, Royal Institute of Architects of Ireland; J. Smith, President Sheffield Society of Architects and Surveyors; A. E. Sawday, President, Leicester and Leicestershire Society of Architects; R. I. Bennett, President, Manchester Society of Architects; David Barclay, President, Glasgow Institute of Architects; William Glover, President, Northern Architectural Association; W. L. Bernard, President, Bristol Society of Architects; Robt. Evans, President, Nottingham Architectural Society; E. A. Ould, President, Liverpool Architectural Society; W. H. Bidlake, President, Birmingham Architectural Association; W. Carby Hall, President, Leeds and Yorkshire Architectural Society; Charles King, President, Devon and Exeter Architectural Society; T. M. Cappon, President, Dundee Institute of Architecture; W. Bell, President, York Architectural Society; J. Coates Carter, President, Cardiff, South Wales, and Monmouthshire Architects' Society; J. Souttar, President, Aberdeen Society of Architects; Henry F. Kerr, President, Edinburgh Architectural Association; J. Douglass Mathews; Thos. W. Cutler.

All architects and persons interested in architecture are cordially invited to attend the Congress and to take part in the discussions on the papers read. A card of admission to meetings

will be sent to any non-member of the Royal Institute on application to the Secretary, Royal Institute of British Architects. The following is the provisional programme of the proceedings of the Congress :—

Monday, 18th June.—8 p.m. Reception by the President R.I.B.A. (Mr. Wm. Emerson), in the Meeting Room of the Institute, 9, Conduit-street, W. 8.30 p.m. (First Meeting). Presentation of the Royal Gold Medal. Owing to the unavoidable absence of the recipient, the Commendatoire Rodolfo Lanciani, Professor of Roman Topography in the University of Rome, the Medal will be received on his behalf by one of the Secretaries of the Italian Embassy.

Tuesday, 19th June.—3 p.m. Paper: "The Official Control of Public Buildings." By the President R.I.B.A. 8.30 p.m., Conversazione, at Guildhall.

Wednesday, June 20.—11 a.m. Papers: "The Collaboration of the Architect, the Painter, and the Sculptor." By Mr. E. W. Mountford; Sir Wm. Richmond, K.C.B., R.A.; and Mr. Roscoe Mullins. 3 p.m. Visit to be arranged. 8 p.m. Paper: "The Ideal City: Streets and Bridges: Public Monuments: Public Gardens and Open Spaces." By Mr. Halsey Ricardo; the Right Hon. the Earl of Meath.

Thursday, June 21.—12.30 p.m. Visit to be arranged. 3 p.m. Visits to Stafford House and other large houses. 8 p.m. Paper: "The Education of the Public in Architecture." By Mr. Reginald Blomfield.

Friday, June 22.—11 a.m. Business meeting—Paper: "Uniform Bylaws." By Mr. Lacy W. Ridge. Mr. Charles Hadfield (Sheffield) and Mr. A. E. Sawday (Leicester) to move the following resolutions :—

1. That in the interests of architecture it is inexpedient that buildings of a municipal character be designed and erected by engineers or surveyors having no architectural training.

2. That as a matter of sound finance and in the interests of ratepayers, it is desirable that the duties of the Borough Engineer and Surveyor should not include work of an architectural character.

3. That it is detrimental to the interests of the architectural profession that buildings of a municipal character should be designed and erected by the Borough Engineer and Surveyor.

3 p.m. Visits to Messrs. Jas. Powell & Sons' Glass Works, Whitefriars, E.C.; Messrs. Holloway Bros.' Works, Westminster.

7.30 p.m. R.I.B.A. Annual Dinner, Whitehall Rooms, Hôtel Métropole.

Saturday, 23rd June.—Visit to Greenwich.

The meetings will be held in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, W. Admission to each visit will be by separate ticket, and all visiting tickets must be specially applied for. All communications should be addressed to the Secretary, Royal Institute of British Architects.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Erection of Buildings in Friendly-street, Deptford.

Deptford.—That the resolution of the Building Act Committee of April 9, 1900, for the Council, consenting to the erection of five houses on the western side of Friendly-street, Deptford, with the forecourt fence at less than the prescribed distance from the centre of the street (Mr. G. Wilson) be rescinded.—Agreed.

Lines of Frontage.

Chelsea.—That the application of Messrs. Lethaby & Troup for an extension of the period within which the erection of buildings upon plots 1 to 4, Cheyne-walk, Chelsea, to abut upon Beaufort-street, was required to be commenced, be granted.—Agreed.

Chelsea.—An addition to the school building on the south-west side of Marlborough-road, Chelsea (Mr. T. J. Bailey for the School Board for London).—Consent.

Hackney, North.—A factory building on the site of No. 24, Shacklewell-lane, Hackney (Mr. J. R. Vining for Messrs. Lloyd, Attree, & Smith).—Consent.

Hampstead.—That the application of Mr. A. P. Johnson for the Vestry of Hampstead, for an extension of the periods within which the erection of a one-story library building on the eastern side of Westbere-road, Hampstead, at the corner of Sarre-road, was required to be commenced and completed, be granted.—Agreed.

Lewisham.—Four houses with bay-windows on the east side of Bromley-road, Catford, opposite Charsley-road (Mr. W. Bailey for Mr. S. S. Brush).—Consent.

Lewisham.—A one-story shop on the forecourt of No. 72, Perry-vale, Forest-hill (Mr. F. A. Smith for Miss E. T. Smith).—Consent.

Rotherhithe.—An addition, with a one-story porch in front, to the Presbyterian Church on the west side of Southwark Park-road, Bermondsey (Mr. A. C. Forrester for the Building Committee of the Bermondsey Presbyterian Church).—Consent.

Wandsworth.—That the application of Mr. F. Perks for Mr. R. Simpson, for an extension of the period within which the erection of houses with one-story shops on the site of The Hawthorns and grounds, on the west side of Balham High-road, Wandsworth, at the corner of Marius-road, was required to be completed, be granted.—Agreed.

Battersea.†—A one-story porch and a one-story bay window to Clifton House, No. 58, Cambridge-road, Battersea, at the corner of Bridge-road (Mr. H. Branch for Dr. Macrory).—Refused.

Deptford.—Eight houses with shops on the site of Nos. 302 to 318 (even numbers only), New Cross-road, Deptford (Mr. C. H. Court).—Refused.

Dulwich.—One-story shops on the forecourts of Nos. 76 and 78, Church-street, Camberwell (Mr. W. Seth Payne for Mr. W. Adams Murphy).—Refused.

Hackney, North.—A covering over the gateway entrance adjoining No. 43, Northwold-road, Stoke Newington (Mr. E. Law for Mr. H. Chidley).—Refused.

Wandsworth.†—One-story shops in front of Nos. 1 to 7, The Boulevarde, Balham High-road, Balham (Mr. W. N. Paice for Mr. J. Stone).—Refused.

Wandsworth.—That Mr. P. H. Adams be informed that the Council is not prepared to modify the conditions upon which consent was given on April 3, 1900, to the erection of one-story shops on the forecourts of Nos. 147 and 149, Balham High-road, Balham.—Agreed.

Brixton.—Twenty houses on the eastern side of Coldharbour-lane, Brixton, at the corner of Vaughan-road, and the erection of houses on the eastern side of Vaughan-road (Messrs. Shoebridge and Rising or Mr. J. Pearman).—Refused.

Projections.

Fulham.—Two porches at the entrances to the church of St. Augustine, Lillie-road, Fulham, at the corner of Moylan-road (Messrs. J. E. K. & J. P. Cutts for the Rev. P. S. G. Propert).—Consent.

Woolwich.—Bay-windows in front of Nos. 2 to 28 (even numbers only), Westmount-road, Eltham (Mr. G. F. Logsdail for Mr. A. Cameron Corbett, M.P.)—Consent.

Lewisham.—Bay-windows to ten houses on the south side of Theodore-road, Hither Green (Mr. J. Stanford).—Refused.

Width of Way.

Deptford.—Cattle lairs at the Foreign Cattle Market, Deptford, at less than the prescribed distance from the centre of Prince-street (Mr. A. Murray for the Corporation of the City of London).—Consent.

Deptford.—Three two-story houses with shops on the east side of Watergate-street, Deptford, at the corner of Trevithick-street (Messrs. Douglas Young & Co.).—Consent.

Limehouse.—A building at Portland Wharf, St. Anne-street, Limehouse (Mr. C. G. Green for Mr. H. W. Johnson).—Consent.

Whitechapel.—A two-story workshop at No. 2, Alie-place, Goodman's-fields, Whitechapel (Messrs. J. Hood & Sons for Mr. M. Specterman).—Consent.

Westminster.—That Mr. J. R. Jones be informed that the Council is not prepared to consent to a deviation from the drawings approved on February 7, 1899, for the erection of a building on the western side of St. Ann's-lane, Great Peter-street, Westminster.—Agreed.

Deviation from Certified Plans.

Fulham.—Certain deviations from the plans certified by the District Surveyor under Section 43 of the Act, so far as relates to the proposed rebuilding of the "Jolly Maltster" beer-house on the site of No. 15, Vanston-place, and Nos. 1, 3, and 5, Farm-lane, Walham Green (Messrs. Nowell, Parr, & Kates for the Royal Brewery Company, Brentford).—Consent.

Kennington.—Certain deviations from the plan certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed rebuilding of the "Prince of Wales" beerhouse, No. 11, Jonathan-street, Vauxhall, at the corner of Wickham-street (Mr. L. A. Withall for Messrs Lovibond & Sons, Limited).—Refused.

St. Pancras, South.—Certain deviations from the plans certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed rebuilding, with residential flats on the upper floors of the "Apollo" public-house, No 191, Tottenham Court-road, at the corner of Francis-street, on the sites of Nos. 191 and 192, Tottenham Court-road, and No. 19, Francis-street (Mr. C. F. Doll for Messrs. Ireland & Fitch).—Refused.

Line of Frontage and Width of Way.

St. George, Hanover-square.†—The bringing forward of the sashes of the shop windows of No. 18, New Bond-street, St. George, Hanover-square (Mr. D. H. Waddell for E. Streeter & Co., Limited).—Refused.

Line of Frontage and Construction of Buildings.

Dulwich.—An open iron and glass shed at the Metropolitan Fire Brigade Station adjoining the Crystal Palace, Crystal Palace-parade, Sydenham, (Mr. O. Fleming for the Fire Brigade Committee of the Council).—Consent.

Lewisham.†—A wood and iron covered way at the side of No. 2, Ryecroft-road, Lewisham (Mr. E. Petters for Mesdames M. Dafforn and E. Doman).—Refused.

Formation of Streets.

Clapham.—That an order be issued to Mr. C Grey St. John sanctioning the formation or laying out of a new street for carriage traffic to lead out of the east side of Manor-street, Clapham. That the name Navy-street be approved for the new street.—Agreed.

Islington, North.—That an order be issued to Mr. T. W. Biggs sanctioning the formation or laying out of a new street for carriage traffic to lead from Pemberton-gardens to Pemberton-terrace, Junction-road, Islington (for the Tufnell and Caledonian Parks Syndicate, Limited). That the name Pemberton-avenue be approved for the new street.—Agreed.

Brixton.—That an order be issued to Messrs. Shoebridge & Rising refusing to sanction the formation or laying out for carriage traffic of a new street, 40 ft. wide, to lead from Coldharbour-lane to Vaughan-road, Brixton (for Mr. J. Pearman).—Agreed.

Norwood.—That an order be issued to Messrs. G. Trollope & Sons, refusing to sanction the formation or laying out of a street for carriage traffic to lead out of the north side of St. Julian's-farm-road, West Norwood.—Agreed.

Height of Buildings.

City of London.—Buildings on plots 3 and 5, on the south side of Lloyd's-avenue, City, to exceed in height the width of that street (Mr. W. Hilton Nash for Mr. J. Chambers).—Consent.

The recommendations marked † are contrary to the views of the Local Authorities.

Correspondence.

To the Editor of THE BUILDER.

FOUNTAINS ABBEY.

SIR,—I shall be glad if you will allow me to add a few remarks in explanation of the opinion which I have expressed on the origin of the system adopted in vaulting the nave aisles at Fountains. I did not intend to convey that this system was peculiar to Burgundy, but simply that it was here imported from Burgundy by the Cistercians.

I named the four examples on plate 99 of Dehio and Von Bezold's *Die Kirchliche Baukunst*, because they show how this system of covering aisles with transverse barrel vaults came to be adopted, and this is clearly explained in the text of their great work. They say (i. 302) that pointed barrel vaults were used earliest, and most generally over single-aisled churches. These barrel-vaulted churches are distributed geographically over Provence, Septimania, Aquitaine, and north as far as the ower Loire (i. 324). Among the various methods which were adopted for abutting these barrel vaults, we find examples in which the outer wall is put back to the outer face of the buttresses, forming side chapels covered with transverse barrels which afford a safe abutment to the barrel vault over the nave itself. This is illustrated at Orange (Vaucluse) on their plate 99, 3. Sometimes the buttressing walls are pierced by openings, as at Bénévent l'Abbaye (plate 99, 5), thus nearly approaching the three-aisled plan. This form is native to the south of France, and goes back to Roman tradition (see plate 39, 10). Through the Cistercians it spread through Germany and Switzerland, but without making any way in these countries (i. 312). Burgundy adopted many different systems of vaulting, and this among others. It was favoured by the Cistercians in the east, as at Fontenay (Côte d'Or), founded 1118, and lying nearly midway between Citeaux and Clairvaux; Hauterive (Switzerland, near Freiburg), founded 1137; and Bonmont (canton of Geneva)—both Cistercian abbeys, illustrated on Dehio and Von Bezold's plate 99, 4 and 6. In the west it occurs only in some early examples, such as the cathedral of Limoges, and Ronceray in Angers (i. 362). Isolated examples, due to Cistercian influence, are found at Saint-Pathus (Seine-et-Marne), a church which was given to the Cistercians of Molesme in 1102, and as far south as the Cistercian church of St. Nicholas, Girgenti (Sicily), dating not earlier than 1219 (Enlart's *Origines Françaises de l'Architecture Gothique en Italie*, p. 74).

At Fountains we find the same system of vaulting the nave aisles, but without any intention of covering the main span with the barrel vault which was

really the *raison d'être* of this method. The system has nothing in common with the groined vault on transverse arches usually adopted by the Normans, and, like the pointed barrel vaults over the transept chapels at Fountains and Kirkstall, is entirely foreign to Anglo-Norman methods. The fact that St. Bernard sent Geoffrey from Clairvaux to assist the monks of Fountains, in the light of the considerations detailed above, seems to me to prove conclusively that this system was an importation from the homeland of the order. But there is no question here of any importation of "Cistercian style," for at Fountains these particular features are associated with the traditional English great round piers, with scalloped capitals, and with semi-circular transverse arches over the aisles, &c.; and, with the exception of some special features of plan, and the suppression of ornament characteristic of the Cistercians, the work is entirely designed in the Anglo-Norman manner of the time. It is worth remark, too, that these foreign features (as I hold them to be) are found only in the earliest churches of the order in England. Before the nave of Fountains was built, a system of ribbed vaults had already been developed at Durham, Winchester, Gloucester, and Peterborough—to say nothing of the district around Caen—which was far in advance of the method adopted in the aisles at Fountains.

I may add that I have no desire to be associated with "the too common assertion as to foreign origin of purely English work." Indeed, the paper of mine to which you are good enough to refer was written to disprove the exclusive claim of the Ile de France to the discovery of the ribbed vault, which has been advanced by M. Lefèvre-Pontalis, Mr. C. H. Moore, and their followers.

JOHN BILSON.

The Student's Column.

DETAILS OF STRUCTURAL IRON AND STEEL.

20.—EXTERNAL LOADS ON BEAMS.

AS employed in connexion with structural work, the term *beam* is the name given to any member exposed to transverse stresses, whatever may be the material of which it is composed. The term *girder* is generally restricted in application to flanged beams of iron or steel, but as a matter of principle it is not necessary to draw any distinction between a beam and a girder. When a beam is supported at one end or at both ends, and a load is imposed upon the beam, several results follow:—

1. The weight of the beam is divided between the supports if there be two. If only one support be used, it must of course carry the entire weight.

2. The load placed upon the beam is transmitted to the supports, though not necessarily in equal proportions.

3. The beam is bent in some measure by its own weight, and by the weight placed upon it. At the same time shearing force is developed, tending to cut the beam asunder in a vertical direction.

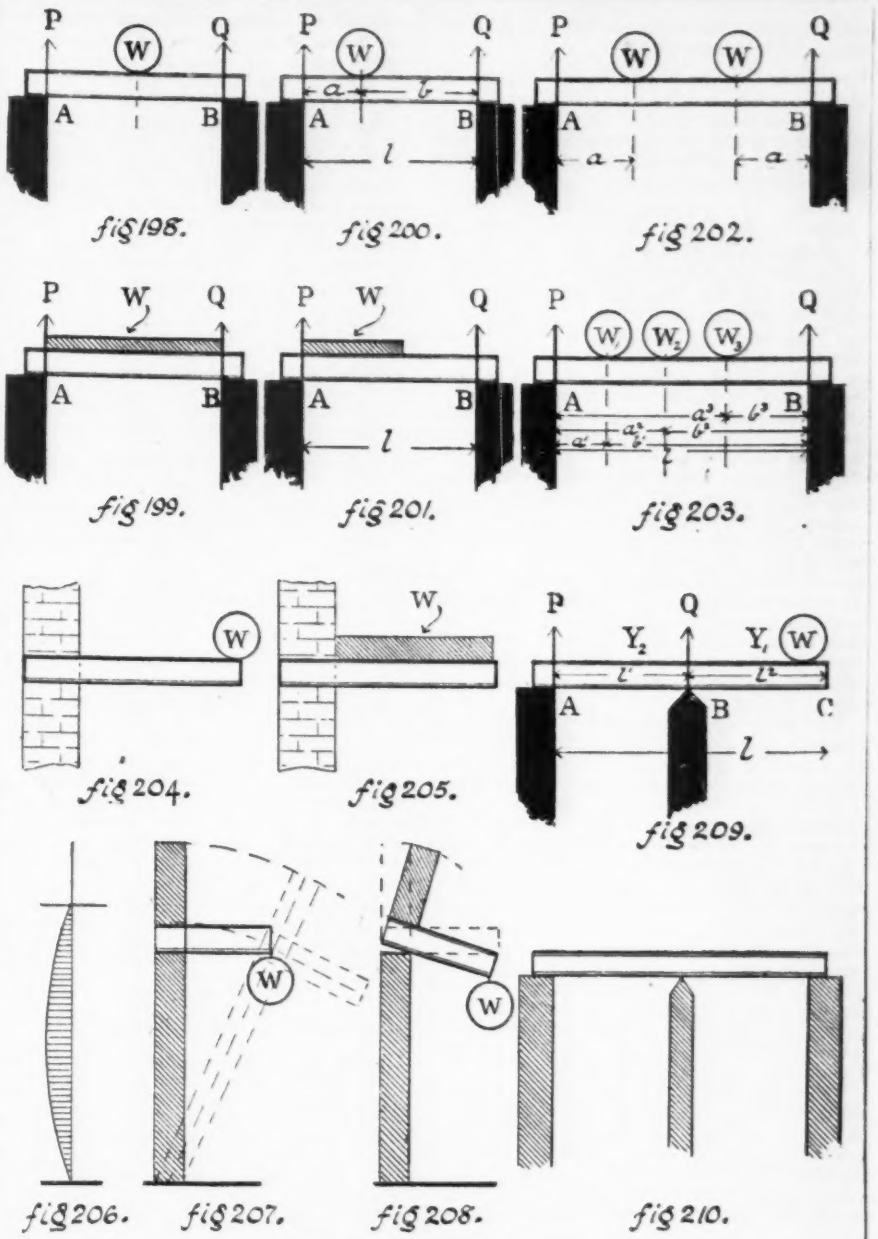
4. Internal stresses are caused, acting upon the fibres of the material of the beam, and these stresses vary from point to point along the beam.

From this brief statement it will be clear that a distinction must be drawn between forces acting externally on the beam and those which are set up in the fibres of the material. When a beam is loaded at one or more points, the loads cause downward vertical action, and also develop upward vertical reaction at the point or points of support. It is usual to designate these forces as positive and negative respectively. As the forces to which we now refer are all parallel and act in one plane, the following conditions are necessary if the beam is to be kept in a state of equilibrium:—(1) The sum of the negative forces must be equal to the sum of the positive forces; (2) the sum of the moments of the forces tending to turn the beam in one direction round any fixed point must be equal to the sum of the moments tending to turn it in the opposite direction round the same point.

Loads are generally divided into three classes:—

1. *Concentrated* loads, generally assumed to be concentrated at one or more points, although they must actually occupy some finite length of the beam.

2. *Uniformly-distributed* loads, spread over the whole or part of the length of the beam, and generally measured in pounds or tons per lineal foot.



Illustrations to Student's Column.

3. Loads which are partly concentrated and party distributed.

These three classes of load must come under one or other of the following divisions:—

a. Dead loads. b. Live Loads. c. Intermittent loads.

Every beam in a building has to support a dead load, comprising the weight of the beam itself and weight due to some of the other parts of the structure, such as small beams, joists, floor arches, floor boards, timber upon which flooring is nailed, ceilings, partitions, tanks with the water contained therein, and, in general, anything forming a part of the building and its permanent contents. Every beam in a building has also to support some part of the live load, due to the weight of inmates, of furniture, of goods, and of any objects whose positions may be changed. An intermittent load is one repeatedly or suddenly applied and removed, and which may be exemplified by the case of a hoist or crane.

The position occupied by any load on a beam affects the proportion in which weight is divided between the supports, and the leverage due to bending of the beam affects the amount of strain suffered by the walls or by the columns supporting the beam. The position of the load upon a *semi-beam* or *cantilever*, cannot, of course, make any difference in the weight carried by the supporting wall or column, but the leverage exerted must by no means be overlooked. At the present stage we are chiefly concerned with the manner in which the load is divided between the supports of a beam, and flexure will not now occupy our attention. In the case of semi-beams, however, some notice will be made of leverage, but these members will be assumed to be perfectly rigid. In the following discussion of external loads the weight of the beams themselves is omitted, as this part of the load is nearly always uniformly distributed, and it would produce unnecessary complication to introduce this element into calculations of a purely explanatory nature. In figs. 198 and 199, we have examples of a concentrated and an uniformly distributed load W, each placed in the middle of a beam supported at both ends. According to the necessary conditions of equilibrium, the total supporting force=W. Using the symbols P and Q to represent the reactions at the abutments A. and B., we find that P+Q=W. Therefore P=Q=½ W.

In fig. 200, a concentrated load is at the distance *a* from one support, and at the distance *b* from the other. Here, again, P + Q = W, but the values of the supporting forces at A and B are not the same. Thus, $P = Wb \div l$, and $Q = Wa \div l$. Similarly, if the load be uniformly distributed over part of the beam, as in fig. 201, it is only necessary to find the centre of gravity of the load and to treat it as a concentrated load acting at that point.

Example 1.—A beam of 20 ft. span supports a load of 24 tons, whose centre of gravity is over a point 8 ft. from the abutment A. Find the supporting forces at the two abutments.

Here $P = 24 \times 12 \div 20 = 14{\cdot}4$ tons

$Q = 24 \times 8 \div 20 = 9{\cdot}6$ tons.

Fig. 202 shows a beam supported at both ends, and carrying two symmetrical loads, each at the distance *a* from the nearest abutment. In this case, P=Q=½ W.

Fig. 203 illustrates a beam whose length =*l*, carrying three weights, W_1, W_2, W_3, placed at the distances a_1, a_2, and a_3 from the abut-

ment A, and at the distances b_1, b_2, b_3, from the abutment B. Here :

$P=(W_1 b_1+W_2 b_2+W_3 b_3)\div l$, or $P=\Sigma W b\div l$,
$Q=(W_1 a_1+W_2 a_2+W_3 a_3)\div l$, or $Q=\Sigma W a\div l$.

Example 2.—A beam of 20 ft. span supports loads of 2, 4, and 6 tons, concentrated at points dividing the span into four equal parts. Find the pressure on each support :

$P=(2\times 15)+(4\times 10)+(6\times 5)\div 20=5$ tons,
$Q=(2\times 5)+(4\times 10)+(6\times 15)\div 20=7$ tons.

Cantilevers, as shown in figs. 204 and 205, necessarily transmit the entire weight to their supports, but the leverage exerted depends upon the distance of the centre of gravity of the load from the support. When a beam, assumed to be perfectly rigid, rests upon two supports so that the load of each is central, compression is the factor chiefly affecting the supports. In the case of a cantilever, however, the lateral load will inevitably produce a bending moment as in fig. 206, causing internal stresses in the material of which the support is constructed. In an iron or steel column or stanchion, the safe load may very easily be reduced by thirty or forty per cent. owing to a side load, and it will therefore be clear that some amount of consideration is desirable before cantilevers or brackets are connected to existing columns, or applied to new ones. Still greater care is necessary when cantilevers are to be fixed to brick walls because brickwork possesses practically no tensile strength.

The conditions necessary for stability will cease to exist if a heavy lateral load be applied to a wall of comparatively little width and height, and the wall might fall bodily, as in fig. 207, if the brickwork were sufficiently adhesive. It is more probable, however, that a portion of the wall would be lifted off or torn out, as in fig. 208, allowing the cantilever and its load to fall to the ground. If the upper part of the wall possessed sufficient weight to counteract the leverage of the cantilever and its load, it is still possible that a portion of the brickwork would be crushed by reason of excessive compressive stress. Such contingencies as these do not always appear to be considered by architects, and perhaps more particularly in connexion with walls which have to support shafting and other engineering details.

When a beam projects over one of its supports, as in fig. 209, and the projecting end C is loaded, the load W, and the weight of the projecting end tend to cause a turning moment about B, and to lift the end A from its bearing. Let P represent the upward force of the beam at the abutment A ; Q, the reaction of the support B ; W, the load at C ; Y, the total weight of the beam ; Y_1, the weight of the part BC ; Y_2, the weight of the part AB ; and l, the total length of the beam. Then $P=(Wl_2+Y_1 \frac{1}{2}l_2)-(Y_2\frac{1}{2}l_1)\div l$, and $Q=(Wl+Y\frac{1}{2}l)\div l$. If the parts AB, BC, be of equal weight, the above equation may be simplified by the omission of the factors into which Y and Y_1 and Y_2 enter. It may sometimes be the case that the end of the beam will be of sufficient weight to exert a downward pressure on A, and so will not require to be anchored, or otherwise held down ; but in other instances it may have a strong upward tendency, and will then require holding down in some adequate manner.

Example 3.—A beam 20 ft. long, weighing 50 lb. per foot, rests upon two supports A and B (fig. 209), the distance AB being 14 ft., and BC=6 ft. At the point C is a concentrated load of 5 tons. Find the downward pressure exerted on the support B and the effect produced at A.

W=11,200 lbs., acting 20 ft. from A ; Y=the weight of the beam=50 x 20=1,000 lbs., acting 10 ft. from A ; therefore

$Q=(224{,}000+10{,}000)\div 14=16{,}714$ lbs.=
7·46 tons.
$P=(11{,}200\times 6+300\times 3)-(700\times 7)\div 14=$
5,228 lbs.=2·33 tons.

If it be decided to hold down the end A, by means of anchor bolts, we can readily ascertain the proper diameter by reference to chapter 14. Assuming the load at C to be intermittent, the working strain on the bolts should not exceed 1¼ tons per square inch. Consequently their effective area should be, say 1.6 square inch, and if two bolts be used, we find by Table XXXIX. that the nominal diameter must be 1 in.

A *continuous* beam is one resting upon three or more supports, as illustrated in fig. 210. The reactions at the various points of support are not the same as they would be if the beam consisted of a number of separate parts. If the beam were cut so as to form two separate beams, on which the total load=2W, the load on the central support would be $(\frac{1}{2}W+\frac{1}{2}W)$, and on each abutment $\frac{1}{2}W$. As the beam is continuous the distribution of the load, 2W, is quite different. Suppose the central pier to be slightly higher than the abutments. Then the total load will rest upon the pier, and none of it will be carried by the side supports. Again, suppose the pier to be a little lower than the abutments. There will then be no pressure on the pier. In practice a mean between these extreme cases is adopted, and the pressures are modified accordingly. The methods by which they are determined involve calculations of a somewhat abstruse nature, and which would be out of place in this column. The subjoined table states the result of such calculations up to four spans, all of equal length, and carrying equal and uniformly distributed loads.

Table XLVII.—Loads on the Supports of Continuous Beams.

Length of Span=l, Load per Unit Length=w.

Number of Spans.	Abutment.	Pier 1.	Pier 2.	Pier 3.	Abutment.
1	$\frac{1}{2}wl$	—	—	—	$\frac{1}{2}wl$
2	$\frac{3}{8}wl$	$\frac{1}{8}wl$	—	—	$\frac{3}{8}wl$
3	$\frac{4}{10}wl$	$\frac{1}{10}wl$	$\frac{1}{10}wl$	—	$\frac{4}{10}w$
4	$\frac{1}{3}\frac{1}{8}w$	$\frac{3}{2}\frac{3}{8}wl$	$\frac{2}{2}\frac{2}{8}wl$	$\frac{3}{2}\frac{3}{8}wl$	$\frac{1}{3}\frac{1}{8}w$

By this table it will be seen that pressure on the abutments is considerably reduced, whilst it is greatly increased on the central support or supports. This condition consequently entails special precaution with regard to the foundations of continuous beams, partly because pressure upon the piers is increased, and partly for the reason that if subsidence of the foundations should take place the nature and amount of the stresses in the beams would be undesirably modified.

GENERAL BUILDING NEWS.

CHURCH AND SCHOOLS, FRATTON, HAMPSHIRE.—The foundation stone of the new St. Barnabas Church and schools at Fratton was laid on the 8th inst. The site is in Railway-view. The church will seat about 500 persons. It will be built of stock bricks, with red brick bands and window arches, and a dado of salt-glazed bricks. The interior will be of stock bricks, with stone columns, and the roof will be of fir, and will be covered with red tiles. The total length of the church inside will be 92 ft., of which the nave will occupy 56 ft. The nave is 30 ft. wide, and the total width of the church, including the north and south aisles, will be 59 ft. The height to the top of the nave roof will be 46 ft. The parish hall will be 60 ft. long and 30 ft. wide, and will have an open timber roof of fir. It will accommodate over 350 persons, and will be used for Sunday Schools, &c. The architects are Sir Arthur Blomfield & Sons, and Messrs. H. Clark & Sons are the builders.

CONGREGATIONAL CHURCH, UPPERTON, EASTBOURNE.—A new Congregational Church has been erected at Upperton. Messrs. Spurrell & Murray are the architects, and the contract has been carried out by Mr. Jos. Martin.

NEW CHURCH AT NEWPORT, MON.—The new church of the parish of St. John the Baptist, Newport, was opened recently. The church is built of stone from the neighbourhood of Risca, and roofed with slate of a stone-grey colour. There is accommodation for 700 persons, and this consists of west tower, south porch, nave with north and south aisles ; and chancel with aisles, of which the one on the south is fitted as a chapel and that on the north is made use of for the organ. There is a clergy vestry east of the north chancel aisle ; and the great fall in the ground towards the north has been made use of by providing a choir vestry, rooms for heating apparatus, and stores in the basement of the structure. The steps are of red stone, and the floor of the chancel is paved with marble mosaic, the remainder of the floors being laid with wood blocks. The interior of all the roofs is painted, while the roof of the chapel is also enriched with a considerable amount of carving. The font is placed in front of a nave arcade pier near the west end of the church, it being enriched with sculpture and set on three steps. There are niches with figures on each side of the east window of the chancel, also in the south wall of the porch and on the side of the chapel. The western tower has not yet been built, but the foundations are laid, and the arch which will divide it from the nave has been erected. The work has been carried out by Mr. W. A. Linton, of Newport, builder, from designs by Mr. Frederick R. Kempson, architect, Cardiff and Hereford.

CHURCH, CRESWELL, NOTTINGHAMSHIRE.—The new church at Creswell was opened on the 17th inst. The building consists of nave, chancel, vestry, and west porch, and will accommodate 260 people. It is lit by electricity supplied by the Bolsover Colliery Company. Mr. Louis Ambler, of London, was the architect, and Messrs. Bowman & Sons, of Stamford, the builders.

PRIMITIVE METHODIST CHAPEL, YORK.—The foundation stone was laid on the 16th inst. of a Primitive Methodist chapel in the Leeman-road district of York. The chapel will be of brick, and will measure 42 ft. by 31 ft. Messrs. Howdill & Howdill, of Leeds, are the architects, Mr. H. Coleman being the contractor.

CHURCH, ROTHERHAM.—The foundation stone of the new Church of St. Michael and All Angels, Northfield, Rotherham, was laid on the 19th inst. The church will be Early English in style, and will consist of nave, north and south aisles, chancel, baptistry, west porches, and octagonal bell turret. In the future it is intended to add a side chapel, clergy and choir vestries, with an organ chamber over the latter. Seating accommodation will be provided for 654. The contractors are Messrs. William Thornton & Son, of Rotherham. The hot-water apparatus will be supplied by Messrs. Wright Bros., of Attercliffe. The work is being carried out from the designs and under the superintendence of Mr. E. Isle Hubbard, of Rotherham.

CONGREGATIONAL CHURCH, EAST HAM.—The memorial stones were laid recently of the East Ham Congregational Church in Stamford-road. The architect is Mr. J. D. Bould.

WESLEYAN CHURCH, WITHERNSEA, YORKSHIRE.—A Wesleyan church is to be erected at the corner of Queen's-street and Young-street, Withernsea. The building will seat 450 people. Messrs. Gelder & Kitchen, of Hull, are the architects.

SCHOOL BUILDINGS, STOKE, NEAR COVENTRY.—The new buildings at the National School at Stoke were opened on the 15th inst. They include two classrooms, with kitchen and cloakrooms, and a covered playground. The architect was Mr. T. F. Tickner, and the builder Mr. Wootten, of Coventry.

METHODIST SCHOOLROOM, DUNSTON, NORTHUMBERLAND.—A new schoolroom is being erected in Ellison-road, Dunston, by the Independent Methodists. The foundation stone was laid on the 12th inst. The building will seat 350 persons. Messrs. Joseph Potts & Sons, Sunderland, are the architects.

COUNTY SCHOOL, LLANFYLLIN, MONTGOMERYSHIRE.—The new county school for the Llanfyllin district was opened recently. The architect was Mr. Teather, of Shrewsbury, and the builder, Mr. R. A. Jones, of Llanfyllin.

CONSERVATIVE CLUB, NORTH SHIELDS.—Plans have been prepared by Mr. F. R. N. Haswell, of North Shields, for new premises in Albion-road, North Shields, for the Tynemouth Conservative Club Company.

RENOVATION OF STANION CHURCH, NORTHAMPTONSHIRE.—Stanion Church was reopened on the 12th inst. after undergoing renovation. The chancel has been reroofed with oak, the windows reglazed with old glass, and the stonework repointed and repaired. The work has cost about 300*l*., and has been carried out by Mr. J. Patrick, of Geddington, under the direction of Mr. J. C. Traylen, of Stamford.

ST. PANCRAS NEW BATHS.—The foundation stone of the public baths and washhouses about to be erected by the St. Pancras Vestry in Prince of Wales-road, Kentish Town, was laid on the 17th inst. by Mr. Edward Cox-Sinclair, Chairman of the Vestry. The buildings, standing upon an area of about 33,000 square feet, will comprise four swimming-baths (two for men and two for women), 130 slipper-baths, and a public washhouse with fifty washing compartments. The entrances to the men's baths will be from the principal frontage—viz., Prince of Wales-road—and the entrances to the women's baths and the public washhouse department will be from Grafton-road. Refreshment-rooms and three club-rooms will be provided. The men's first-class bath will also be arranged as a public entertainment hall in the winter months, for which purpose it will be capable of seating 1,200 persons. All round the hall there will be a spectators' gallery. Externally the facings of the edifice will be of red bricks with terra-cotta dressings, and the buildings will be lighted by electricity. The total cost of the land and buildings will be about 95,000*l*. Mr. T. W. Aldwinckle is the architect. The building was illustrated and described in our issue for September 23 last.

PUBLIC SHELTER, HOLBECK MOOR, YORKSHIRE.—A public shelter, the gift of a resident in the locality, has been erected on that portion of the Moor which is known as the "Intake." The building was designed by Mr. F. W. Rhodes, of Upper Wortley.

SANATORIUM FOR CONSUMPTIVES, AUCHTERHOUSE, FORFAR.—The Works Committee of the Dundee Sanatorium for Consumptives have adopted plans by Mr. William Alexander, of Dundee, for the new sanatorium to be erected on the Airlie Estate, a short distance east of Auchterhouse. The buildings will consist of a main block, having a frontage of 200 ft. ; a block to the north-west of this, but connected with it by a covered corridor ; and a laundry block to the north-east. The cost is estimated at 10,000*l*.

SANITARY AND ENGINEERING NEWS

RESERVOIR, BUSHEY HEATH.—The formal turning of the water into the new covered service reservoir of the Colne Valley Water Company, at Bushey Heath, took place on the 8th inst. The reservoir adjoins the old one, forming a continuous line of bank, opposite Windmill-lane, the ground being 503 ft. above sea level. The reservoir stands partly in and partly out of the ground, having a capacity of nearly five million gallons, the floor space being nearly one acre. The floor and walls are formed of cement concrete. The roof is built of concrete arches in thirteen spans, supported by girders resting on iron columns, standing on square blocks of York stone let into the floor. The concrete structure is covered by earthwork. The works were designed by Messrs. John Taylor, Sons, and Santo Crimp, Westminster, Mr. Henry Hill, of Maidenhead, having been the contractor.

SEWERAGE SCHEME, GILDERSOME, YORKSHIRE.—The Gildersome Urban District Council have accepted tenders for the first portion of the sewerage scheme which has been prepared by Messrs. J. Waugh & Sons, of Bradford. Mr. M. Arundel's tender of 5,991*l.* 2s. 5d. has been accepted for the construction of the main sewerage, about 10,000 yards.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHTING, ILKESTON, DERBYSHIRE.—On the 18th inst. Mr. F. H. Tullock, Inspector to the Local Government Board, held an inquiry at the Town Hall, Ilkeston, into the application of the Ilkeston Corporation for power to borrow 18,271*l.* for purposes of electric lighting. The Electrical Engineer, Mr. V. D. Cooper, explained how the proposed station was to be constructed, and stated that it was intended to erect a refuse destructor.

ELECTRIC LIGHTING, LINCOLN.—Mr. F. H. Tulloch held a Local Government Board inquiry in the Guildhall, Lincoln, on the 17th inst., into an application by the Corporation for power to borrow 6,000*l.* for the purpose of providing and laying cables in the southern part of the city, in connexion with the electric light. The electrical engineer to the Corporation is Mr. C. S. Vesey-Brown.

FOREIGN.

UNITED STATES.—A stained-glass window to the memory of the late Bishop Howe has recently been inserted in the Church of St. Michael, Bristol, Rhode Is. The subject is a free rendering of Raphael's painting in the Louvre of "St. Michael's Victory over Satan." It is the work of the Tiffany Glass and Decorating Company.——The death is announced, at Chicago, of Mr. Dankmar Adler, one of the best-known architects in that part of the United States. He was an active organiser of the Western Association of Architects, of which body he was for many years president; and after the fusion of that Association with the American Institute of Architects he became secretary of the united societies. Amongst his principal works are several important Jewish synagogues and public buildings in Chicago, and large railway stations, block buildings and opera-houses in other parts of the United States.——It is announced at St. Paul, Minn., that the National Educational Association has arranged a competition in essays on (1) the seating, (2) lighting, (3) heating, and (4) the ventilating of public school buildings. The competition is open to essayists from any country, and prizes of the value of $200 and $100 will be awarded as first and second in order of merit in each of the four competitions mentioned. The Secretary of the Association and the United States Commissioner of Education are to conduct the competition.

AUSTRALIA.—In the course of his presidential address to the Institute of Architects of New South Wales, at Sydney recently, Mr. John Barlow alluded to the desirability of a new Building Act for Sydney and suburbs. There was no hope of assistance, he said, from the city council, as that body had such a poor opinion of what constituted proper building control, as proved by relegating the city architect to a position subordinate to the city surveyor's department. Dealing with the main sewerage question he stated that although the system was excellent in the city, out of 22,000 houses only about 1,000 were properly connected with the sewers, and that for the most part the others acted as ventilators of the sewers, admitting foul gas to the interior of the dwellings; to remedy this evil further legislation was necessary. The President made some remarks on the subject of conducting Royal Institute of British Architects' examinations in Sydney, stating that nothing had at that time been concluded in reference to the matter. As our readers are aware, however, the Royal Institute of British Architects has since arranged to hold examinations in Sydney for admission to the Institute.——A new Custom House is about to be erected at Townsville, Queensland, at a cost of 26,642*l.* A special feature of the interior treatment is the limited use of woodwork, and the substitution of cement wherever wood is usually adopted, in order to cope with the depredations of white ants.

FRANCE.—The Académie des Beaux-Arts has elected Herr Lenbach, of Munich, as Honorary and Corresponding Member in the Section of Painting, in place of the late M. Magaud, of Marseilles.——M. Baudot has just completed the plans for a new church to be built at Montmartre, under the dedication name of "St. Jean de Montmartre."——M. Lequeux, architect, has been commissioned to take in hand the restoration of the old parish church of Clichy, erected in 1630.——The fine Salle des Gardes in the Museum of Dijon, containing the celebrated tombs of the Dukes of Burgundy, has been restored under the direction of MM. Suisse and Sauvageot, architects to the Commission des Monuments Historiques.—— M. Jacques Drevet, for twenty years a member of the Société Centrale des Architectes Français, has died at the age of sixty-eight. He was a pupil of his father and of Questel; but studied the practical side of architecture under François Rolland and Léon Rivière. In 1862 he drew out a large scheme for the improvement, almost transformation, of the town of Bordeaux, including the opening of a canal from sea to sea. Almost at the same time he proposed, at Lyons, a scheme for a bridge to connect the plateau of Fourvière with the Croix Rousse. He was also one of the promoters of the project for bringing Paris into direct communication with the sea. Among his architectural works may be mentioned the restoration of the Château of Ville-d'Avray and Chamarande, the tomb of Théophile Gautier, a number of villas, and the buildings for the "L'Œuvre de l'Hospitalité de Nuit." At the great exhibition of 1867 he received a decoration as architect of the Egyptian section.——M. Eugène Lambert, the painter, has died at the age of seventy-five; he studied in the atelier of Delacroix, and first exhibited, in the Salons of 1847 and 1848, studies of birds and of still life. He subsequently made a speciality of interior scenes in which dogs and cats were always prominent. Among his best known works are "Chats du Cardinal Richelieu," "Une Famille des Chats," "Repas interrompu," "Pillage d'Armoire," &c. He had received medals in the Salons of 1865, 1866, and 1870.——M. Ravaisson-Mollien, member of the Académie des Inscriptions et Belles-Lettres, has died at the age of eighty-six; he was formerly curator of the collection of antiques at the Louvre. He was author of numerous archæological works which were much appreciated, and his researches into the origin and intention of the statue called the "Venus of Milo" gained him a special reputation.——The death is announced also of M. Eugène Ornières, formerly architect to the town of Arcachon.

ITALY.—Remarkable activity has of late been displayed in excavating in the forum at Rome. An excavation made in the *domus publica*, and the tombs of the Vestals, has revealed a network of sewers. A fine marble-paved floor, presumably of the time of Nero, has been found close to the Palatine, and near by, in a newly-discovered corridor, a large number of gold coins of the late Roman Empire came to light. When we were there not long since digging was going on in the immediate vicinity of the large fluted columns, which already stand on a slender enough base; it is to be hoped that proper precautions will be taken (if the work is not already finished) to prevent any danger to the structure arising from the excavations.

CYPRUS.—It is reported from Famagusta that for some time past wanton destruction of ancient monuments has been taking place in Cyprus, and as a consequence the President of the Italian Society for the Protection of Art approached the Italian Government on the matter. The Italian Under Secretary of State for Foreign Affairs has now written to the Italian Consular Agent at Larnaca requesting further information, whilst the Ambassador in London is to bring the matter before the British Government.

FAR EAST.—The site for the new military hospital at Hong Kong has been approved and the ground prepared for building. The plans are stated to be complete, and they are to be sent out by the War Office authorities before the end of this month.

MISCELLANEOUS.

ARCHÆOLOGICAL DISCOVERY AT DURHAM.—Archæologists in the North of England will be interested in a discovery made in the ancient castle at Durham a few days ago. A number of workmen were engaged in repairing the floor in an apartment adjacent to the suite of rooms used by Her Majesty's Judges of Assize when at Durham on circuit, when they discovered a portion of a newel staircase in an excellent state of preservation. Further excavations have brought to light more of the staircase, which it is presumed was in use as a means of access to the upper floors of the castle before the construction of the famous black oak staircase by Bishop Cosins in the seventeenth century. At the time this was constructed the newel staircase appears to have been built up, since, for all practical purposes, it was no longer necessary. The old staircase is ascribed to Bishop Pudsey, and it seems to have been a way of communication between Pudsey's upper and lower halls. The work of bringing to light the buried staircase is proceeding under efficient direction.—*Newcastle Leader.*

THE SANITARY INSTITUTE.—At an examination in Practical Sanitary Science, held in London on April 27 and 28, 1900, eight candidates presented themselves. The following four candidates were granted Certificates in Practical Sanitary Science:—J. E. Farmer, James Felgate, W. H. Pickin, and J. S. Saunders.

INSTITUTE OF BRITISH DECORATORS.—At a meeting of the Committee of this Institute, held at Painters' Hall, on Thursday, the 17th inst., Dr. Yasusi Iskamoto, Professor of Architecture in the Imperial University of Tokyo, was elected an honorary member of the Institute.

SCREEN AND REREDOS, ST. AGNES' CHURCH, BRISTOL.—A screen, reredos, and litany desk were dedicated in St. Agnes' Church, Newfoundland-road, Bristol, on the 13th inst. The reredos has three panels painted by Mr. Alfred O. Hemming, of London, the central panel representing the Lord's Supper. The screen is of oak, and was carved by Mr. W. Wilmutt. The work was designed by Mr. W. Wood Bethel, the architect of the church.

PUBLIC IMPROVEMENTS, SUDBURY, SUFFOLK.—A Local Government Board inquiry, conducted by Major-General H. D. Crozier, R.E., was held at the Town Hall, Sudbury, on the 16th inst., into applications by the Corporation for powers to borrow 7,000*l.* for public and private street improvements; 3,500*l.* for sewerage works; 2,000*l.* for works in connexion with the water supply; and 650*l.* for electric lighting purposes. Details of the various works of street improvement were given by the Town Clerk (Mr. W. Bayly Ransom) and the Borough Surveyor (Mr. T. W. A. Hayward). The loan in connexion with the water supply was for, among other things, cast iron mains for use on the Wents. The Surveyor explained that the sewerage works were part of a general scheme for the whole borough. The electric lighting loan was for the purpose of lighting the Wents Estate. Evidence was given by the electrical engineer, Mr. W. C. C. Hawtayne, of London.

THE PEEL LIBRARY.—In the collection of books formed by Sir Robert Peel, which will be sold at auction on June 12-5, and consists mainly of topographical and kindred works, are comprised some notable copies of Pennant and Lysons. The former work is a grangerised copy (1793) printed upon largest paper and interleaved with nearly one thousand plates—including several scarce views by Hollar and others—illustrative of London and Middlesex. The five volumes and supplement of Lysons (1796) are similarly enlarged to fifteen volumes, royal quarto, inlaid with about sixteen hundred prints, portraits, and original drawings. There are also some choice examples of most of the standard county histories, such as Manning & Bray's "Surrey," Hasted's "Kent," Nash's "Worcestershire," Ormerod's "Cheshire," Surtees's "Durham," Morant's "Essex," Nichols's "Leicestershire," Duncombe's "Hereford," Polwhele's "Cornwall and Devonshire," Whitaker's "Leeds and Richmondshire," Dallaway & Cartwright's "Sussex," &c.

PROFESSOR LEWES ON INCANDESCENT MANTLES.—On the 21st inst. Professor Vivian B. Lewes delivered the last of a course of three Cantor lectures upon "The Incandescent Gas Mantle" before the Society of Arts. He exhibited the "De Lery" system of incandescent gas-lighting, which is somewhat extensively employed in the United States. The burner has a head much resembling the rose of a common laboratory Bunsen burner, the gas being burned in a number of separate non-luminous jets arranged to form a circle. In each jet is suspended a small tassel made of the same materials as are employed in the manufacture of ordinary mantles. Although the illuminating power yielded by the "De Lery" system is not so great as that of a common Welsbach or Sunlight mantle, yet its illuminating effect is very considerable. A small brilliant point of light, said Professor Lewes, to which the photometer ascribes a value of 40 candles, will not illuminate a room so efficiently as 40 separate candles suitably arranged around the room. And as the area of material in a state of incandescence in the "De Lery" system is greater than the incandescent surface of a mantle of the ordinary shape, the illuminating effect of the "De Lery" system, as distinguished from illuminating power, is proportionately greater. The lecturer then discussed the history of non-luminous gas burners. He stated that the theory that the loss of luminosity in an "atmospheric" gas burner is due to more complete or more rapid oxidation of the hydrocarbons is not entirely correct, and showed that the luminosity of a flame may be destroyed by an inert gas, such as carbon dioxide, or nitrogen. The three factors which cause the flame to become non-luminous are (1) increased rapidity of oxidation of the hydrocarbons, (2) dilution with inert gas, and (3) the cooling of the flame.

"BRICKWOOD."—This is a material looking rather like brick, but which is stated to be capable of being sawn or nailed into like wood, and is proposed as a good material for partitions. It is stated to be, and seems to be, fireproof or at least fire-resisting, and its rough and porous surface furnishes an excellent key for plaster. We have tested it for nailing, and find the nails hold just as in wood. We cannot speak as to its fire-resisting qualities, but the appearance of the material is in favour of them. Altogether, it seems a useful material and worth attention. It is the patent of Mr. Jabez Thompson and Mr. W. H. Harvey (Westminster) is the agent for it in London.

STOCKPORT AND DISTRICT BUILDING TRADES FEDERATION.—The ordinary monthly meeting of the Stockport and District Building Trades Federation was held at the "Spread Eagle Hotel," Hillgate, recently, Mr. Atkinson (joiners' delegate) presiding. A general discussion concerning trade matters took place, and several important resolutions were passed. The plasterers' delegates reported that the impending local dispute with the employers had been amicably settled, the men having received an advance of a halfpenny per hour. The plasterers' labourers' delegates reported that they had received a similar advance.

CENOTAPH, ST. ANDREW'S CHURCH, EAST ALLINGTON, NEAR KINGSBRIDGE, DEVONSHIRE.—A cenotaph in memory of the late rector, the Rev. H. R. Fortescue, has been erected in this church in the north arcade, facing the nave at the juncture of nave and chancel, and directly over the pulpit. It is of polished alabaster, surrounding a slab of white marble. Messrs. Harry Hems & Sons, of Exeter, executed the work.

SALE OF BUILDING LAND AT FOREST GATE.—Messrs. Tuckett & Son offered by auction at the Princess Alice Hotel, Romford-road, E., on the evening of the 17th inst. the sixteenth portion of the Plashet Hall Estate, comprising 112 lots, having 16 ft. frontages to the extension of Monega-road, near White Post-lane. There was satisfactory competition, resulting in the sale of 88 lots, at prices varying from 70*l.* to 73*l.* per lot, for a total of 6,225*l.* The auctioneers have now sold about 2,250 lots upon this portion of the Gurney estate. Many hundreds of houses have been built and occupied, and it is understood that there is still a large demand in the neighbourhood.

FIRE TESTS.—The investigations undertaken by the British Fire-Prevention Committee on Wednesday afternoon comprised a test with two fire blinds and a test with the "Mack" partition. The test with the fire blinds was intended to demonstrate the protection that could be afforded to windows and doors facing property in which there is an outbreak of fire, and which may be only separated by a small area or alley. This test was of one half-hour's duration. The partition test was to show the fire-resistance of a thin partition followed by the application of water, the test having a duration of one hour and a quarter, and the temperature ranging up to 2,000 deg. Fahr. There was a large attendance of members and visitors at these tests, including many district surveyors and public officials, and prior to the testing operations, the members of the executive and officers of the Committee attended a luncheon in honour of her Majesty's Birthday, which will probably become an annual event.

CAPITAL AND LABOUR.

LOCK-OUT IN THE SWEDISH BUILDING TRADE.—The employers in the building trade in Stockholm decided a few days ago upon a general lock-out of their men. This decision has been arrived at owing to the failure of various attempts to bring about an understanding between masters and men and to the outbreak of strikes in several building yards. The lock-out, although directly affecting 5,000 workmen only, will, it is stated, throw 20,000 men out of employment.—*Morning Advertiser.*

STRIKE OF DUNFERMLINE MASONS.—The agreements between the Dunfermline master masons and the operatives concluded on 14th inst. The masters met some time ago and agreed to ask the abolition of certain conditions and a reduction of 1d. per hour. At the meeting on the 14th the masters agreed to offer a compromise—namely, to allow the old conditions to continue, and to make the reduction only ½d. per hour. By a small majority the men refused this offer, and came out on strike. The wage for the past year has been from 9d. to 9½d. per hour, and now the masters offer from 8½d. to 9d.

STRIKE OF BRICKLAYERS IN THE POTTERIES.—At a meeting of the members of the Potteries and Newcastle Branch of the Master Builders' Association recently it was decided to make a final offer to the bricklayers on strike for an increase of wages of an advance of ½d. per hour. Notices of this offer were ordered to be sent to the local and London secretaries of the Bricklayers' Society. If it is accepted work will be resumed at once. The proposed increase will bring the wages up to 8¾d. an hour, a rate at which the bricklayers a week or two ago expressed their willingness to return to work, but at that time the master builders would only concede an increase of ¼d. per hour.

LEGAL.

IMPORTANT POINT UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Percival *v.* Garner came before the Court of Appeal, composed of Lords Justices A. L. Smith, Vaughan Williams, and Romer, on the 19th inst., on the defendant's appeal from the decision of the Liverpool County Court Judge under the Workmen's Compensation Act, 1897.

The plaintiff was the widow of a workman killed by an accident arising out of and in the course of his employment. It appeared that a building was being erected on the premises of Messrs. Bowman & Co., chemical manufacturers, the building being over 30 ft. in height, and was constructed by means of scaffolding. It was erected under the supervision of Messrs. Bowman & Co., who supplied the materials for it, and who employed the architect. The defendant, at Bowman & Co.'s request, supplied the labourers for the brickwork of the building, and those men so supplied acted under the orders of Bowman & Co.'s foreman, and the defendant had nothing to do with the work, nor was he responsible [for the way in which it was done, nor had he any control over the men when at work. The defendant paid the men he supplied for the work, and Bowman & Co. remunerated him by the payment of an extra halfpenny an hour upon the men's time. Percival was one of the labourers supplied for the work by the defendant, and while at work on the building he fell off a scaffolding and was killed. The defendant contended that he was not an "undertaker" within the meaning of Section 7 of the Workmen's Compensation Act, 1897, and, therefore, not liable to pay compensation. The County Court Judge, however, decided that he was the person undertaking the construction of the building, and was, therefore, an undertaker, and he accordingly made an award in favour of the widow. From this decision the defendant now appealed.

At the conclusion of the arguments their lordships held that the mere fact that the defendant undertook to supply the labour did not make him an "undertaker" within the meaning of the Act, and that the proceedings had been taken against the wrong person. The Court, therefore, reversed the decision of the County Court Judge and allowed the appeal.

Mr. A. P. Thomas appeared for the appellant (defendant) and Mr. V. D'Arcy for the respondent (plaintiff).

CASE UNDER THE LONDON BUILDING ACT.

AT Westminster Police-court a short time since, Mr. Williams, District Surveyor for South Kensington, summoned Mr. William Downs, of Hampton-street, Walworth-road, under the London Building Act of 1894, for erecting a building of over 1,000 superficial feet area, at 61, Brompton-road, intended partly for trade and partly for residential purposes, with separation walls of less thickness than 8½ in. Mr. Williams said that very serious disasters had occurred on large buildings jointly used for trade and occupation, and the statutory thickness of not less than 8½ in. for separation walls was now insisted on. Mr. James Morley, for the defendant, said a great deal was paid for the freehold, and 9-in. walls took up too much space. Fireproof materials had been used throughout in construction, and the builders, &c., from the first, had resisted the contention of the District Surveyor. The wall in dispute could not, according to the Act, be deemed a cross-wall, because it was not intended to be carried to the highest story. After a very long legal argument, evidence was given by a Deputy District Surveyor that other District Surveyors invariably tried to get 9-in. separation walls, but in several cases had given way and accepted 4½-in. walls rather than press the matter to a judicial decision. Mr. Horace Smith decided in favour of the defendant, but said he would willingly grant the District Surveyor a case.

EMPLOYERS' LIABILITY ACT.

SUB-CONTRACTOR OR FOREMAN?

AT Brompton County Court on Monday, before Judge Stonor and a jury, Walter Lavender, a builder's labourer, living at South Wimbledon, Surrey, sought to recover damages, under the Employers' Liability Act, from Messrs. Parry & Co., builders and contractors, Bank-buildings, Fulham, London, S.W., the claim being in respect to personal injuries sustained by the plaintiff through negligence for which, it was said, the defendants were responsible.

Mr. Moyses was counsel for the plaintiff, and Mr. Lowe, counsel, defended.

The plaintiff stated that on October 3 last he was engaged by the defendants' foreman, William Finch, to assist in some excavating work at the Wimbledon House Estate, Surrey. His wages were to be at the rate of 7½d. an hour, a full week then being 55½ hours. On the following day he and Finch were working together cutting out a large trench. In order to proceed with the work as quickly as possible, they dug under some 2 ft., and used grafting tools at the top to break away huge masses of earth. They had been working below, and afterwards went on top to knock down a mass of earth some seven or eight feet in height. They were unable to move the mass, and Finch said to him (plaintiff), "Get down and pick a bit more." Witness remarked, "I don't think it is safe," but Finch replied: "Go on, you get down, and I will see that it is all right." Plaintiff accordingly went below and proceeded with the under picking. Suddenly the whole mass of earth fell upon the unfortunate fellow, with the result that his right leg was badly fractured. He was detained in a hospital for five weeks, and since the day of the accident he had only been able to do some four weeks' light work. No struts were used on the job. It was Finch who engaged him, arranged as to his wages, and paid him by the hour.

Mr. Christopher Richard Griffiths, architect and surveyor, maintained that vertical struts and raking shores should be used in the course of work such as that in question.

The Judge: What was the character of the soil?

The Plaintiff: It was clay.

The Witness: Clay, in such a case, would be of very treacherous nature.

Several workmen were called to speak as to the position of Finch. This evidence went to show that the men were engaged by Finch; but that members of the defendant firm were continually on the spot, directing as to the manner of doing the work.

Two medical men were called, and agreed that the man had not been in a proper state of health for about six months after the accident to do even light work, and that it would be about twelve months before he would be completely recovered.

For the defence, Mr. Edward Parry, of the defendant firm, stated that his people sublet the excavating work in question to Finch. The plaintiff and the other men called that morning were not engaged or paid by the defendant firm, and he had never given orders to the men working with Finch.

Some receipts, bearing Finch's signature, for payments on account of the work were handed in, and three written out by the last witness's son, subsequently to the accident, bore the words "for self and partners."

Mr. Edward Parry, cross-examined, said that all the men who were paid at the office of his firm were in the employ of the firm. Finch used to go on Saturdays and get money for work which he and his men had done during the week.

Another receipt was put in for cash received by Finch from the defendant firm for "piecework," as the excavating was described.

Mr. Walter Parry, another member of the defendant firm, and son of the last witness, said that although he was constantly on the job, he never had anything whatever to do with the plaintiff and the other men employed by Finch.

William Finch, referred to above, said that he received payment from the defendant firm, week by week, according to the amount of work done, paid himself and the other excavators at the rate of 7½d. an hour, and divided any balance there might be amongst them all. None of them were his "partners," and he was not aware of the words "for self and partners" on the receipts which he signed subsequently to the day of the accident.

The Judge: Did you discharge any of the men?

Witness: No, sir; some of them left of their own accord after telling me that they were going.

Cross-examined: Mr. Parry, senior, or his son could have told any of the men to go about their business.

George Pitts, general ganger to the defendants on the job, said that it was no part of his duty to interfere with Finch's men.

The Judge put the following questions to the jury: Was the plaintiff a servant of the defendant company—in other words, a workman employed by the defendants? If so, what damages is he entitled to?

The jury answered the first question in the affirmative, and assessed the damages in plaintiff's favour at 100*l.*, being 56*l.* for loss of wages, &c., and 44*l.* for pain and suffering.

His Honour gave judgment accordingly, and allowed full costs.

WHAT IS A SKY SIGN?

AT Lambeth Police-court, on the 22nd inst., Mr. Henry Guest, of Newington-butts, was summoned, at the instance of the London County Council, for failing to comply with a notice served on October 20, 1899, requiring him to forthwith take down and remove a sky-sign retained contrary to Section 128 of the London Building Act, 1894.

Mr. T. Chilvers, from the solicitors' department of the Council, appeared in support of the summons, and the defendant was represented by Mr. Scarlet, barrister.

In opening the case Mr. Chilvers said Mr. Guest was the proprietor of a public-house at Newington-butts, and had there a signboard which stood upon the one-story roof of a part of the building. The board was more than 3 ft. in height above the parapet wall to which it was affixed, and he submitted that it was a sky-sign within the meaning of the Act, and asked for an order for its removal.

Mr. G. Townsend, a surveyor in the office of the London County Council, described the board forming the subject of the proceedings. He said it was about 13 ft. above the parapet and was 10 ft. 6 in. wide, and was used to advertise the various branches of Mr. Guest's business. It rested upon the parapet of the wall and was secured by hold-fasts attached to the side walls of adjoining buildings, and steadied by iron stays.

In answer to Mr. Scarlet, the witness said he believed the board had been in the same place for over twenty-five years.

For the defence Mr. T. H. Smith, an architect, said the board was securely fixed to the buildings on either side of it, and would stand if the wall beneath it were removed.

By Mr. Chilvers: The board rested upon the parapet wall, but was not affixed to it.

Mr. Scarlet said he thought the Council must be short of work when they took proceedings in respect of a facia board, and endeavoured to turn it into a sky-sign. They all knew the nature of the sky-signs at which the Act of 1891—the original Act—was aimed. He submitted that the board was not a sky-sign within the meaning of the London Building Act, but came within the exemption clause of Section 125.

Mr. Francis agreed with that contention, and dismissed the summons, but without costs.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

1,336.—ROAD SCARIFIERS: *J. Marshall.*—By way of an improved method of lifting and lowering the scarifying tool (see No. 8,907 of 1898), the contrivance comprises eyes upon screw rods which hold the ends of the tool spindle beyond the pivotted frame, and pass through nuts that serve for worm-wheels and rest in brackets upon a shaft which is mounted in the saddle, the worm-wheels being turned and the rods being screwed up or down by means of worms upon a separate shaft which is worked with hand wheels.

1375.—CIRCULAR SAW GUARDS: *A. Cook.*—On a snag at the end of a horizontal bar is screwed an adjustable front hood which can be raised, and on the same arm's end are two other snags, to which a riving knife, at the back, is attached with screws and slots; a radial arm, pivotted on to an adjustable nut, carries the horizontal arm to enable the guard to be swung away from the saw. The knife's lower end is fastened on to a sliding bar, and in another shape of the apparatus the screw which clamps the adjustable nut is replaced with a slide and a screw clamp.

1,396.—DOOR AND OTHER HINGES: *J. Williams.*—The hinge is devised in order that it may hold the door, when closed, by the locking of the two hinge-flaps, which are made of spring steel and are turned over at their edges; of the two flaps one is longer than the other, so that when the hinge is closed the curl of one flap is pressed in behind the curl of the other. With the hinge may be combined a spring, so that the door can be automatically closed.

1,466.—LIFT VALVES: *W. H. Moore.*—For lifting a ball (of metal, india-rubber, &c.) from its seat in the tap's conical outlet, a cup is fixed on to the upper end of a vertical rod which is supported with cross-bars on the end of a sleeve, in which are cut vertical slots that engage with stops upon the tap.

1,481.—WIRE LATHING: *P. Pick.*—The lathing is composed of woven wire, fashioned in a waved or undulated form, and the plaster or cement when laid on the meshes interlocks with the wires.

1,511.—CLINOMETERS AND LEVELS: *H. Hassenpflug.*—A graduated circular tube, half-filled with liquid, is mounted within elastic packing in a round box which is screwed on to the rule; certain variations of the contrivance are specified—for instance, the rule, when circular in plan, may have three vertical glass tubes placed 120 deg. apart from one another, or four short graduated glass tubes may be set midway between the rule's edges, and be joined by channels in the body of the rule.

1,556.—PIPE COUPLINGS COMBINED WITH VALVES: *D. F. Reaume.*—A sleeve draws together the two pipe ends, whilst a ball valve is raised from its seat by means of a pin which presses upwards a winged pin beneath the ball; a nipple is joined to the supply pipe, and when the coupling is unscrewed the joint action of a spring and of the liquid's pressure serves to force the valve down upon its seating, an elastic packing ring allows the valve to remain closed whilst the sleeve is yet in its place.

1,573.—BRICKS AND ARTIFICIAL STONE: *P. Kleber.*—An admixture of quicklime and from eight to fifteen times its own weight of moist sand is sprinkled in a second mixing machine, with water enough to just slake the lime, the mass being then reduced to a plastic state by the addition of a little water or milk of lime; the compound is, after a while, ready for being moulded into bricks or blocks to be hardened by exposure to steam under a pressure of from six to eight atmospheres. The specification describes a method of feeding the composition to the moulding presses by means of a conveyer, a perforated trough with a reciprocating action, and two hoppers; each hopper has two divisions, in order to provide for alternate working, and to let the charge in one division remain at rest to finish the watering of the lime, whilst the other division passes the completed compound to the press underneath it; a crank disc and connecting rod give a reciprocating movement to the trough, which is mounted upon links.

1,577.—APPARATUS FOR CLOSING DOORS: *A. E. Durrant.*—To the door is pivotted a piston that works within a cylinder which is pivotted to the door frame. With the opening of the door a spiral spring becomes compressed and so closes the door again when it is freed; some oil in the cylinder that is forced through a small hole in the piston prevents a too rapid closing of the door; or the oil may be replaced with a short spiral put within the barrel to act as a check.

1,618.—CONTINUOUS STAIRWAYS, &C.: *J. Buchanan and G. F. Thompson.*—At the bottom and top of the elevator are sprockets around which pass the endless bands on to which the treads are hinged, the treads being held in a horizontal position during their ascent by means of side trunnions that engage with fixed guides, a broad band passes around two drums and its stiffened upper edge constitutes a moving balustrade—or the band's edges may be made to work within fixed guides.

1,664.—BRICKS, PAVING-BLOCKS, SLABS, MOULDINGS, &C.: *G. A. Boisselier & V. C. Laurent.*—With a solution made of alum, 1 part, sulphate of zinc, 16 parts, magnesium chloride, 16 parts, and hydrochloric acid, is mixed a powder or cement composed of carbonate of lead, 2 parts, calcined alumina, 1 part, pulverised felspar, 9 parts, carbonate of magnesium, 87 parts, and sodium hydrate, 1 part; to the resultant paste or liquid cement are added fragments of wood, stone, coal, gravel, sand, earthenware, &c., and the composite mass is then ready for being moulded into mouldings, slabs, bricks, paving-blocks for bridges, stables, courtyards, and so on.

1,726.—GULLY TRAPS: *F. Gordon.*—Two partitions—the one being at right angles to the other—divide the chamber into one large and two small compartments. The water from the larger division, in which silt collects, overflows through a vertical grating into the upper of the two small compartments, and thence, underneath the lower small compartment, to the outlet.

1,735.—MANHOLE COVERS: *H. Lindley.*—Above the manhole is fitted a hopper-shaped vessel or holder, whose outlet openings are, under normal conditions, closed with doors or flaps, which are pivotted upon cross-bars, and are retained against their seating with balancing weights. The weights are so adjusted that they shall prevent back-flow of gas, whilst they at the same time allow water to flow.

1,739.—GREASE TRAPS: *S. T. Prestor and H. J. Ballett.*—Within the main body which carries the grease trap is arranged, and made integrally with it, an annular recess which supports the outer and turned-down flange of a cup-shaped vessel or receiver that can be lifted out with a ringed handle fixed, within it, on to its base; the trap's top rests upon a socket, which is fashioned at the top of the main body.

1,745.—A COMPOSITION FOR FLOORS, ROOFS, AND PAVEMENTS: *J. Ross.*—The compounded material is made by mixing slaked lime, kunkur being preferably chosen, with blue-black clay, and grinding, sun-drying, and burning the mass; it is next ground and sifted, and then sand and molten pitch are added. The composition is claimed to be waterproof and practically fireproof.

1,821.—CONTRIVANCE FOR LADDERS: *W. Thomson.*—Perforated metal brackets fasten pads made of india-rubber or some similar non-slipping material, to the lower end of the ladder; the pad is formed with a holding-flange, and is driven through a hole in the bracket that is screwed on to the side of the foot of the ladder.

1,829.—HINGES: *S. Wilkes and J. Wilkes.*—The inventors contrive means for fixing the pin of butt and similar hinges. In the more simple form they put the grooved head of a pin, whose lower portion is corrugated, inside the hinged flap's socket, and provide a bearing for the corrugated part of the pin by pouring molten anti-friction metal through a side opening; the upper part of the pin is cone-shaped, and has a hexagonal collar at the base of the cone. The other hinged flap's socket is dropped down over the pin's conical top, whereby the door on to which the flap is screwed can be lifted off its hinge. In the case of a hinge with more sockets than one upon its flap, the number of antifriction bearings and the corrugated portions of the pin are increased accordingly. The principal of the device may be adapted to double-jointed hinges.

1,830.—WINDOWS AND SASHES: *W. Fischer.*—Recesses are formed in the wall, within which the lower sashes may slide, whilst the upper sash may either slide between the vertical stiles of the upper sashes or turn upon its own pivots set horizontally, its rabbetted edges being arranged so as to fit into recesses in the wall and to slide in the wall and in the stiles of the lower sashes. A chain stay will serve to keep the upper sash opened.

MEETINGS.

FRIDAY, MAY 25.

Royal Institution.—Mr. F. Fox, M.Inst.C.E., on "The Great Alpine Tunnels." 9 p.m.

SATURDAY, MAY 26.

Incorporated Association of Municipal and County Engineers.—Northern District Meeting, Carlisle.

St. Paul's Ecclesiological Society.—Visit to Gray's Inn. Meeting in Gray's Inn-square at 3 p.m.

Institute of Sanitary Engineers.—Annual Summer Outing: Excursion to Paris. Assemble at Victoria Station at 8.15 p.m.

MONDAY, MAY 28.

Surveyors' Institution.—Annual General Meeting, to receive the report of the Council and the announcement of the result of the election of officers for the ensuing year. 3 p.m.

Society of Arts (Foreign and Colonial Section).—Sir E. Sassoon, Bart., M.P., on "Imperial Telegraphic Communication." 4.30 p.m.

TUESDAY, MAY 29.

College for Men and Women, 29, Queen-square Bloomsbury (Free Lectures on Architecture).—Mr. Philip Norman on "One of our City Churches." 8.30 p.m.

Royal Institution.—Mr. R. Warwick Bond on (1) "Ruskin, Man and Prophet." 3 p.m.

THURSDAY, MAY 31.

Architectural Association.—Annual Dinner, Criterion Restaurant, Piccadilly-circus. 7 p.m.

Society for the Encouragement of the Fine Arts.—Dr. J. S. Phené, F.S.A., on "The Rise, Progress, and Decay of the Art of Sculpture in Greece; with the Influence of its Lofty Attainments on Modern Thought and Civilisation." 8 p.m.

Architectural Association of Ireland.—Election of officers; President's valedictory address, &c. 8 p.m.

FRIDAY, JUNE 1.

Royal Institution.—Sir Henry Roscoe on "Bunsen. 9 p.m.

SATURDAY, JUNE 2.

Edinburgh Architectural Association.—Annual Excursion. Visits to Balmerino Abbey, Lindores Abbey, and Newburgh.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 9.—By FAREBROTHER, ELLIS, & Co. (at Blackburn).	
Blackburn, Lanes.—21 to 31 (odd), Darwen-st., area 1,346 yards, f., r. 204*l.*	£6,100
Market-pl., a fee farm rent of 5*l.* 2s. 8d.	150
Nab-lane, &c., f.g. rents 61*l.* 3s. 2d., reversions varying from 903 to 966 years (in numerous lots)	16,074
By HAMPTON & SONS.	
Merrow, Surrey.—Uplands and 21 a. 1 r. 5 p., f.	9,050
Fleet-st.—4, Pacquet-court, f., r. 150*l.*	3,500
Bracknell, Berks.—Hill field, 5¾ a., f.	700
May 10.—By STRAKER & SON (at Abergavenny). Llandenny, &c., Monmouth.—Coldbrook Farm, 142 a. 3 r. 24 p., f.	3,600
Clodock, Hereford.—The Bryn Farm, 179 a. 1 r. 31 p., f.	2,300
St. Michael Cwmdu, Brecon.—Clwyd-y-Graig Farm, 62 a. 1 r. 9 p., f.	725
Abergavenny, Mon.—20, Frogmore-st., f.	830
Frogmore-st., a piece of freehold land.	270
Lion-st., &c., f.g.r. 21*4l.* 8s. 9d., reversions varying from 77 to 91 yrs (in lots)	6,425
By BOYTON, PEGRAM, & BUCKMASTER.	
Harlesden.—Westbury-rd., 12 plots of building land, f.	660
By J. G. DEAN & CO.	
Sheerness-on-Sea, Kent. 1 and 2, Marine-passage, f.	410
Balham.—80, 82, and 84, Rossiter-rd., u.t. 73 yrs., g.r. 31*l.* 10s.	880
By G. GOULDSMITH, SON, & CO.	
Belgravia.—49, Eaton-ter., u.t. 21 yrs., g.r. 5*l.*, r. 106*l.*	1,100
3, Chester-ter., u.t. 24 yrs., g.r. 10s., r. 100*l.*	1,000
19, South Eaton-pl., u.t. 24 yrs., g.r. 10s., r. 90*l.*	900
79, Elizabeth-st., r. 150*l.*; also l.g.r. 10*l.*, u.t. 24 yrs., g.r. 15*l.*	2,560
By C. C. & T. MOORE.	
Limehouse.—30, Conder-st., c.	315
16 and 18, Aston-st., u.t. 26 yrs., g.r. 6*l.* 10s.	400
Bow.—35, Lawrence-rd., u.t. 47½ yrs., g.r. 4*l.*, r. 30*l.*	310
16, Caxton-st., u.t. 51 yrs., g.r. 4*l.* 10s.	255
81, Morville-st., u.t. 52½ yrs., g.r. 4*l.* 4s.	245
80, Malmesbury-rd., u.t. 47 yrs., g.r. 4*l.*, r. 28*l.*	290
Walthamstow.—Handworth-av., three building plots, f.	270
Limehouse.—7, Turner's-rd., u.t. 61 yrs., g.r. 5*l.* 10s., r. 55*l.*	510
St. George's East.—16, Cable-st., f., r. 60*l.*	1,000
By J. A. & W. THARP.	
Limehouse.—232 and 232a, Burdett-rd.; 44 and 44a, St. Paul's-rd., u.t. 68 and 62 yrs., g.r. 13*l.*, r. 116*l.*	1,500
Bow.—82, 84, and 86, Bow Common-lane, f., r. 96*l.*	1,370
Bethnal Green.—2 to 12 (even), Eckersley-st., u.t. 77 yrs., g.r. 24*l.*	1,750
7 and 8, Pedley-st., u.t. 77 yrs., g.r. 8*l.*	845
Cheshunt, Herts.—High-st., "Oakridge House," two cottages, and timber yard, area 12,700 ft., f., with goodwill, &c.	1,500
Goff's Oak, Herts.—Goff's-lane, two freehold cottages	170
Walthamstow.—161, St. John's-rd., f.	280
By STIMSON & SONS.	
Sydenham.—20 to 30 (even), Hillmore-grove, f., r. 133*l.*	1,870
Edgware-rd.—North-st., an improved rent of 23*l.*, for 22 yrs.	200
Southwark.—15, Merrick-sq., u.t. 25½ yrs., g.r., &c., 6*l.*, r. 40*l.*	315
Walworth.—2 to 5, Sutherland-pl., u.t. 43 yrs., g.r. 16*l.*	800
Camberwell.—144 and 146, New Church-rd., f.	695
Notting Hill.—407 and 409, Portobello-rd., f.	745
419, 421, and 429, Portobello-rd., u.t. 77¼ yrs., g.r. 30*l.* 10s.	590
19 and 20, Lionel-mews, f.	480
18, Munro-mews, u.t. 75 yrs., g.r. 4*l.*	155
Tottenham.—99, 101, and 103, West Green-rd., f., r. 120*l.*	1,915
Blackfriars.—3 to 9 (odd), Collingwood-st., u.t. 19 yrs., g.r. 6*l.*	550
By HOOKER & WEBB (at Croydon).	
Kenley, Surrey.—Foxley-rd., a Freehold Building Estate 10¼ acres	3,800
Woldingham, Surrey.—Slines Oaks-rd., Two Plots of Land, f.	310
Butlers Dean-rd., Three Plots of Land, f.	175
Redhill, Surrey.—Earlsbrook-rd, the Central Dairy, f., r. 50*l.*	760
Catford.—Englehcart-road., &c., f.g.r. 24*l.*, reversion in 97 yrs.	650
May 11.—By ABERCROMBIE & EDMUNDS.	
Willesden Green.—154, High-rd., u.t. 82 yrs., g.r. 6*l.*, r. 45*l.*	510

By DENNANT & Co.

Fulham.—83, Dawes-rd., u.t. 85 yrs., g.r. 6*l.* 6*s.* £285
Deptford.—13, High-st., f., r. 100*l.* 2,175
Brockley.—35, 43, 45, 49, 55, and 57, Tyrwhitt-rd., u.t. 61½ yrs. g.r. 14*l.*, r. 309*l.* 10*s.* 3,200
12, Darfield-rd., u.t. 91¾ yrs., g.r. 5*l.* 320
1, The Grove, u.t. 91¾ yrs., g.r. 8*l.* 11*s.* 645
Forest Hill.—28, Honor Oak Park, u.t. 76 yrs., g.r. 5*l.*, r. 36*l.* 370

By DOLMAN & PEARCE.

Temple Bar.—10, Bell yard, f. 3,800

By ROBERT REID.

Paddington.—267, Harrow-rd., u.t. 47½ yrs., g.r. 10*l.* 10*s.*, r. 120*l.* 1,675
31, Westbourne-ter. North, u.t. 50 yrs., g.r. 12*l.*, r. 65*l.* 700

By WILLIAM ROLFE.

Bethnal-green.—Hare-st., the "King and Queen" p.-h., f., r. 70*l.* 2,700
93, Hare-st., f., r. 32*l.* 650
Holloway.—53, St. John's Villas, f., r. 45*l.* 780

By ROBINS, GORE, & MERCER.

Oxford-st.—42, Berners-st., u.t. 17 yrs., g.r. 90*l.*, r. 275*l.* 800
Shepherd's Bush.—8, Westwick-gardens, u.t. 75 yrs., g.r. 7*l.*, r. 40*l.* 380
Hyde Park.—56, Bryanston-st., u.t. 21¾ yrs., g.r. 17*l.* 17*s.*, r. 95*l.* 600
Sydenham.—39, Cator-rd., u.t. 74¼ yrs., g.r. 14*l.* 13*s.* 3*d.*, r. 65*l.* 570

By S. WALKER & SON.

City of London.—25, Wormwood-st., Corporation leasehold, g.r. 5*l.* 5*s.* 9*d.* 3,800
Aldermanbury, f.g.r. 70*l.*, reversion in 3¼ yrs. 2,150
Highbury.—34, Highbury-grove, u.t. 49½ yrs., g.r. 10*l.* 5*s.*, r. 140*l.* 1,500
King's Cross.—7 to 13, Chesterfield-st., f., r. 385*l.* 6,495
9 and 10, Belgrave-st., u.t. 32½ yrs., g.r. 10*l.*, r. 115*l.* 1,065
Gray's Inn-rd.—38 and 40, Acton-st., u.t. 37 yrs. g.r. 16*l.*, r. 104*l.* 960

By W. N. WILLOUGHBY.

Tulse Hill.—19, Court-rd., f., r. 37*l.* 530
23, 25, and 25a, Court-rd., u.t. 78½ yrs., g.r. 15*l.*, r. 104*l.* 1,025

May 12.—**By GEORGE HONE (at Worcester).**

Earl's Croome, &c., Worcester.—Blue Bell Farm, 79 a. 0 r. 19 p., f. 4,050

May 14.—**By W. A. BLAKEMORE.**

Battersea.—Shelgate-rd., f.g.r. 23*l.*, reversion in 68 yrs. 575
Bethnal-green.—Collingwood-st., c.g.r. 45*l.* reversion in 54 yrs. 935
Norwood.—Pilgrim Hill, Evesham-villa, f. and c., r. 30*l.* 325
West Smithfield.—A Land Tax of 32*l.* per annum 1,025

By PROTHEROE & MORRIS.

Bow.—Bow Common-lane, "The Britannia" p.-h., f.g.r. 80*l.*, reversion in 28 yrs. 3,400
Old Ford.—Ellesmere-rd., f.g.r., 18*l.*, reversion in 26 years 405
Bromley-by-Bow.—Knapp-rd., f.g.r. 16*l.*, reversion in 68½ yrs. 450
Sherwood-st., f.g. rents 28*l.* reversion in 68½ yrs. 700
Forest Gate.—Station-rd., f.g.r. 30*l.*, reversion in 58 yrs. 815
Tottenham.—Carlton-rd., f.g. rents 31*l.*, reversion in 77 yrs. 770
Enfield.—Churchbury-ter., f.g. rents 58*l.* 16*s.*, reversion in 77 yrs. 1,665
Forest Gate.—43, Bignold-rd., f. 400
Wanstead.—Blake Hall-rd., "Holme House," f., r. 85*l.* 1,825
1 and 2, Rutland Villas, f., r. 68*l.* 1,150

By ALEX. ROBERTSON.

Regent's Park.—Park Village East, i.g.rs. 98*l.*, u.t. 22½ yrs., g.r. 14*l.* 930
City-rd.—No. 290, u.t. 28 yrs., g.r. 10*l.*, r. 45*l.* 372
2, 3, and 7, Pickard-st., u.t. 28 yrs., g.r. 25*l.* 10*s.* 925

By TOWERS, ELLIS, & Co.

Kensington.—42, Kensington Gardens-sq., f. 2,000
Forest Gate.—39 and 43, Dunbar-rd., f. r. 72*l.* 760
Ealing.—2, Castlebar-rd., u.t. 34 yrs., g.r. 4*l.*, r. 55*l.* 630
18, Castlebar-rd., f. r. 50*l.* 780
Shepherd's Bush.—171 and 173, Uxbridge-rd., u.t. 64 yrs., g.r. 8*l.*, r. 150*l.* 2,470

By WEATHERALL & GREEN.

St. John's Wood.—Barrow Hill-rd., &c., i.g.rs. 84*l.*, u.t. 77 and 22 yrs., g.r. nil 820

By FULLER, MOON, & FULLER.

Croydon.—63 to 137 (odd), Dennett-rd., f. 7,465
68 to 132, 140 to 168 (even) Dennett-rd., f. 9,550
9 Campbell-rd., f. 645
Canterbury-rd., f.g.r. 10*l.*, reversion in 67 yrs. 315
London-rd., Broad Green Lodge and 17 a. 2 r. 20 p., f. 20,250
Wildbore's-lane, a piece of land, 1 a. 1 r. 9 p., f. 1,000

May 15.—**By ARMY AND NAVY AUXILIARY.**

Edenbridge, Kent.—Stangrove House and 34 a. 0 r. 15 p., f. 7,600
Main-rd., enclosure of land, 7 a. 3 r. 13 p., f. 1,080

By ARTHUR BARTON.

Lee.—222, High-rd., u.t. 74 yrs., g.r. 10*l.* 390

By BRODIE, TIMBS, & Co.

Willesden Green.—3, Station-parade, u.t. 85 yrs., g.r. 12*l.* 12*s.*, r. 70*l.* 900

By DAVID BURNETT & Co.

Wimbledon.—Merton-rd., a freehold building estate, 6 a. 4,300
Peckham.—16 to 24 (even), Bournemouth-rd. and i.g.r. 5*l.*, u.t. 64½ yrs., g.r. 30*l.* 1,075
East Ham.—26 to 34, Cyprus-pl., u.t. 80 yrs., g.r. 40*l.* 10*s.* 1,060

By C. W. DAVIES & SON.

Islington.—36 and 38, Essex-rd., f. 2,475
Clapton.—77, Lower Clapton-rd., u.t. 55 yrs., g.r. 10*l.* 10*s.*, r. 60*l.* 660
Dalston.—48 and 50, Lenthall-rd., u.t. 16½ yrs., g.r. 11*l.* 4*s.*, r. 61*l.* 305
Hackney.—78, Bentham-rd., u.t. 45 yrs., g.r. 3*l.* 10*s.* 230
Islington.—31, Prebend-st., u.t. 27 yrs., g.r. 4*l.* 4*s.*, r. 32*l.* 280

By DEBENHAM, TEWSON, & Co.

Tottenham.—The Hale, Hale Farm, 14 a., f. 8,500
Down-lane, two enclosures of land, 9 a. 0 r. 15 p., f. 1,840
Enfield Highway.—Mill Marsh-lane, market garden land, 3 a. 1 r. 14 p., f. 360
Green-st., enclosures of land 62 a. 2 r. 7 p., f. 7,000
Holborn.—11 and 12, Dorrington-st., area 1,550 ft., f. £1,900

By HENRY HOLMES & Co.

Southwark.—Globe-st., Globe Buildings, and a warehouse adjoining, u.t. 40 yrs., g.r. 27*l.* 700

By SCOBELL & LAKE.

Wood Green.—22, Canning-cres., f., r. 28*l.* 535

By E. & A. SWAIN.

Notting Hill.—19, Ladbroke-rd., u.t. 35 yrs., g.r. 7*l.* 10*s.*, r. 52*l.* 10*s.* 480

By WINSTANLEY, HORWOOD, & Co.

Spitalfields.—Artillery-lane, &c., a Corner Building Site, area 2,100 ft., f. 1,900

By HEPPER & SONS (at Leeds).

Leeds.—Park-place, &c., Freehold Factory and Warehouse, area 1,326 yds. 15,000
3 and 4, Grove-ter., f., r. 58*l.* 1,205
26, Camp-rd., f., r. 26*l.* 510
21, Carr-rd. and 3, Carr-grove, f., r. 29*l.* 18*s.* 385

By J. DAWSON & SON (at Ranskill).

Ranskill, Notts.—Two freehold cottages 195

By FOLEY, SON, & MUNDY (at Melksham).

Melksham, Wilts.—Holbrook Farm, 54 a. 2 r. 9 p., f. 3,000
New-rd, Pasture land, 2 a. 3 r. 11 p., f. 152

By CLIMPSON & JOHNSON (at Clapham Junction).

Herne Hill.—43, Romola-rd., u.t. 58 yrs., g.r. 8*l.* 8*s.*, r. 36*l.* 285

By ALFRED RICHARDS (at Tottenham).

Edmonton.—17 to 27 (odd), Findon-rd., f., r. 117*l.* 1,360
Eastbournia-av., block of building land, f. 600
160, Town-rd., f., r. 25*l.* 370

By FLEURET, SONS & ADAMS (at Masons' Hall Tavern).

City of London.—Crutched Friars, "Keene's Globe Tavern," a freehold rental of 200*l.*, reversion in 5¾ yrs. 9,310

May 16.—**By HAROLD GRIFFIN.**

Battersea.—75, Speke-rd., u.t. 64 yrs., g.r. 5*l.* 235
Wandsworth.—139, Bennerley-rd., u.t., 81 yrs., g.r. 6*l.* 10*s.*, r. 32*l.* 345
20, Middleton-rd, u.t. 43 yrs., g.r. 6*l.* 10*s.*, r. 28*l.* 265

By HOBSON, RICHARDS, & Co.

South Kensington.—17 and 18, Child's-pl., f., r. 93*l.* 12*s.* 1,045

By RUTLEY, SON, & VINE.

Edmonton.—16, The Crescent, f., r. 28*l.* 400
Kentish Town.—35, Oak Village, u.t. 57 yrs., g.r. 5*l.*, r. 30*l.* 320
Finsbury Pk.—90, Ambler-rd., u.t. 69 yrs., g.r. 5*l.*, r. 30*l.* 365
Edmonton.—90, 94, and 96, Augustus-st., g.r. 31*l.* 10*s.*, r. 96*l.* 380
24 and 29, Munster-sq., u.t. 22 yrs., g.r. 42*l.* 1*s.* 300
17 and 18, Redhill-st., and 14 and 15, Little Edward-st., u.t. 24 yrs., g.r. 40*l.* 540
20, Redhill-st., u.t. 22½ yrs., g.r. 19*l.* 180
St. Pancras.—90 and 94, Euston-st., u.t. 19½ yrs., g.r. 35*l.* 4*s.* 250
99, Euston-st., u.t. 20 yrs., g.r. 19*l.* 170
Tottenham Court-rd.—18, Warren-st., f. 1,475
20, Grafton-mews, f., r. 45*l.* 680
Kentish Town.—43, Rhyl-st., u.t. 40 yrs., g.r. 7*l.* 290

By R. TIDEY & SON.

Hackney.—12, Hackney-rd., f., e.r. 70*l.* 835
Hoxton.—32, Rushton-st., u.t. 34 yrs., g.r. 5*l.* 5*s.*, r. 40*l.* 240
Clapton.—90 and 92, Glenarm-rd., u.t. 60 yrs., g.r. 5*l.* 5*s.*, r. 62*l.* 650
60, Lower Clapton-rd., u.t. 57 yrs., g.r. 12*l.*, r. 80*l.* 850
De Beauvoir Town.—2, Balmes-rd., u.t. 26 yrs., g.r. 5*l.*, r. 32*l.* 370
14, 16, 18, 22 to 28 (even), Ufton-rd., u.t. 19 yrs., g.r. 36*l.* 15*s.*, r. 218*l.* 1,400
43, Ufton-rd., u.t. 20 yrs., g.r. 3*l.* 10*s.*, r. 32*l.* 220

By FOSTER & CRANFIELD.

Ponders End.—South-place, f., g.r. 80*l.*, reversion in 98 yrs. 1,760
Wimbledon.—Dundonald-rd., f.g. rents 42*l.*, reversion in 88 yrs. 1,065
Newton-rd., f.g. rents 16*l.*, reversion in 87 yrs. 405
Newton-rd., a piece of land, also f.g.r 16*l.*, reversion in 87 yrs. 405
Trevor-rd., f.g. rents 69*l.*. reversion in 87 yrs. 1,735
Norwood.—Ernest-st., f.g.r. 10*l.*, reversion in 62 yrs. 265
Wandsworth-rd.—3 to 17, 23A and 24A, Brandon-st.; also l.g.r. 30*l.* 8*s.*, u.t. 8 yrs., g.r. 40*l.* 950
21 to 27 (odd), Thurlow-st., u.t. 54 yrs., g.r. 5*l.* 10*s.* 700
1, 2, and 3, Brandon-cottages, u.t. 9 yrs., g.r. 7*l.* 10*s.* 170

By N. EASTON & SON (at Hull).

Hull, Yorks. — 46, Whitefriargate, area 314 yards, f. 8,000
Humbleton, Yorks.—Humbleton Grange Farm, 142 a. 3. r. 34 p., f. and c. 4,000
Hessle, Yorks.—The Weir, freehold residence and land adjoining, area 2,298 yards 1,110

By J. M. LEEDER & SON (at Swansea).

Rhossily, Glamorgan.—Pilewell Farm, 65 a. 1 r. 20 p., f. 1,200
Paviland Farm, 363 a. 3 r. 32 p., f., including the manor of Paviland 5,000
Lougher, Glamorgan.—"The King's Bridge Inn," and 0 a. 1 r. 39 p., f. 500
"The Red Lion" p.-h., and three building plots and field adjoining, 4a. or. 15p., f. 900
Three building plots and field adjoining, 4a. 3r. 22p., f. 775
Freehold shop, house, 10 cottages, and 2 fields, 2a. or. 30p. 725

By J. J. HILL & WEAVER (at "Horse Shoe" Hotel).

Stoke Newington.—Albion-rd., "The Albion Hotel," u.t. 48 yrs., r. 105*l.*, with goodwill 24,000

By REYNOLDS & EASON (at Ilford).

Ilford, Essex.—High-st., beneficial lease of business premises for 41 yrs., r. 80*l.*, with goodwill 2,080

By RIDER & SONS (at Notting Hill).

Notting Hill.—5, Colville-ter., u.t. 60 yrs., g.r. 16*l.*, r. 50*l.* 395
15, St. John's-pl., u.t. 62 yrs., g.r. 8*l.* 275

By BELCHER, ADKIN, & BELCHER (at Wantage).

East Hanney, Berks.—Fisher's Farm, 103 a. 2 r., f. 3,500
Lindsey's Meadow, 4 a. 2 r. 22 p., f. 155
A freehold house, orchard, and 2 r. 185

May 17.—**By CHESTERTON & SONS.**

Kensington.—9, Campden Hill-rd., u.t. 54 yrs., g.r. 17*l.* 10*s.*, r. 105*l.* 1,460

By F. HOUGHTON & DAVISON.

Stoke Newington.—23, Milton-rd., u.t. 55 yrs., g.r. 2*s.*, e.r. 50*l.* £480

By NORMAN & SON.

Vauxhall.—59, Bond-st., with off-licence, u.t. 17 yrs., g.r. 4*l.* 10*s.*, r. 36*l.* 230
Walthamstow.—26, 28, and 30, Station-rd., f., r. 117*l.* 1,350
Plaistow.—129, 131, and 133, Pelly-rd., f., r. 78*l.* 650

By OAKLEY FISHER & Co.

Regent's Park.—1, Cumberland-ter., and 1, Cumberland Mews, u.t. 25 yrs., g.r. 52*l.* 10*s.*, e.r. 230*l.* 1,175

By C. SPARROW & SON.

Finchley.—Woodside Grange-rd., "Casabianca," f., e.r. 60*l.* 1,030
Wood Green.—9, St. Michael's-ter., u.t. 76 yrs., g.r. 7*l.* 10*s.*, r. 36*l.* 350

By F. C. SQUIRE & Co.

Pimlico.—5, West-st., with ranges of workshops, stabling, warehouses, &c., in rear, u.t. 23 yrs., g.r. 95*l.* 1,700

By CHARLES ATKINS.

Forest Hill.—8, Devon-hire-rd., f., r. 55*l.* 1,300

By MARK LIELL & SON.

Mile End.—12 and 31, Single-st., f. 605
248, 250, and 252, Bow Common-lane, f. 945
29, 31, 75, and 77, Bridge-st., f. 1,610
Bow Common-lane, f.g.r. 14*l.*, reversion in 67 yrs. 365
Mile End.—18 to 26 (even), 32 and 34, Single-st., u.t. 30 yrs., g.r. 14*l.* 14*s.* 1,075
161, Skidmore-st., u.t. 12 yrs., g.r. 2*l.* 10*s.* 120
Bow.—4 and 7, Lichfield-rd., u.t. 42 yrs., g.r. 6*l.* 13*s.*, r. 56*l.* 645
30, Lichfield-rd., u.t. 44½ yrs., g.r. 3*l.* 10*s.*, r. 28*l.* 335

By STIMSON & SONS.

Mile End.—50, Longfellow-rd., u.t. 68 yrs., g.r. 5*l.* 300
19, Whitman-rd., u.t. 48 yrs., g.r. 6*l.* 500
Croydon.—Woodside-rd., a plot of building land, f. 180
11, Macauley-ter., u.t. 95 yrs., g.r. 4*l.* 10*s.*, r. 28*l.* 215
Sydenham.—42, Tewkesbury-rd., u.t. 70 yrs., g.r. 13*l.* 4*s.*, e.r. 100*l.* 650
Sudbury, Middx.—9 and 10, Orchard-pl., f. 230
Stepney.—21, Halley-st., f., r. 36*l.* 500
Lewisham.—29 and 31, Cressingham-rd., r. 54*l.*, also land in rear, u.t. 61½ yrs., g.r. 14*l.* 10*s.* 450

By NEWBON, EDWARDS, & SHEPHARD.

Kentish Town.—24, Woodsome-rd., u.t. 62 yrs., g.r. 7*l.*, r. 40*l.* 510
Holloway.—40 and 41, Tremlett-grove, u.t. 73¾ yrs., g.r. 14*l.* 14*s.*, r. 82*l.* 845
109, Grove-rd., u.t. 63 yrs., g.r. 7*l.*, r. 41*l.* 410
Islington.—1 to 7, St. Alban's-pl., u.t. 24 yrs., g.r. 46*l.* 12*s.* 400
Hackney.—15, Bishop's-rd., u.t. 45 yrs., g.r. 5*l.* 5*s.*, e.r. 35*l.* 310
Poplar.—124 and 126, Upper North-st., u.t. 53 yrs., g.r. 7*l.* 10*s.* 585
Edmonton.—1 to 71 (odd), and 10 to 68 (even), Salisbury-rd., u.t. 95 yrs., g r. 213*l.* 10*s.* (in lots) 8,570
70, Salisbury-rd., f. 235

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd for yard.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£ s. d.	£ s. d.
White Sea: first yellow deals	18 0 0	22 10 0
Second do.	16 0 0	18 0 0
Third do.	13 0 0	14 10 0
Battens, 40s., 30s., and 15s. less respectively.		
Petersburg: first yellow deals	15 0 0	18 0 0
Second do.	12 10 0	14 0 0
Battens, 30s. and 20s. less respectively.		
Petersburg, white deals	12 0 0	15 0 0
Do. white battens	10 10 0	11 10 0
Riga, white deals	10 0 0	11 10 0
Swedish mixed yellow deals	16 10 0	21 0 0
,, Third do.	14 10 0	17 0 0
,, Fourth do.	13 0 0	14 10 0
,, Fifth do.	12 0 0	13 10 0
Battens, 30s., 20s., and 10s. less respectively.		
Whitewood, 10 to 20 per cent. less.		
Finnish unsorted yellow deals	11 10 0	12 10 0
Battens, 10s. and 5s. less respectively.		
Whitewood, 5 to 10 per cent. less.		
Norwegian second yellow battens	8 0 0	8 15 0
Third do.	7 10 0	8 10 0
Fourth do.	7 10 0	7 15 0
Whitewood, 10s. less.		
Danzig, Crown Deck deals, per 40 ft. 3 in.	0 15 0	1 5 0
Brack	0 12 0	1 0 0
St. Lawrence Pine deals, &c., per P.S.H.:—		
1st, Bright and Dry, regular sizes	21 0 0	28 0 0
,, ,, oddments	14 10 0	22 0 0
2nd ,, regular sizes	16 10 0	19 0 0
,, ,, oddments	11 0 0	15 10 0
3rd, ,, regular sizes	10 10 0	11 10 0
,, ,, oddments	9 0 0	10 0 0
4th ,, regular sizes	9 10 0	10 10 0
,, ,, oddments	8 10 0	9 10 0
St. Lawrence Spruce deals, &c.		
First, regular sizes	11 10 0	13 10 0
Second ,,	10 5 0	10 15 0
Third ,,	10 0 0	10 5 0
Fourth ,,	9 10 0	10 0 0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT (*Continued*).

	£	s. d.	£	s. d.
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.				
New Brunswick Spruce deals, &c.	10	0 0	11	5 0
Oddments, battens, and fourths ..	9	10 0	10	0 0
United States pitch pine planks and boards ..... per square	11	0 0	15	0 0
Prepared Boards,				
1½ by 6½ and 7 in. 1st yellow		11 6		16 3
,, ,, and ,, ...		11 0		13 3
1 by 6½ and 7 in. 1st ,, ...		10 6		12 3
,, ,, ,, white		9 6		10 3
,, ,, and yellow		9 6		11 3
,, ,, ,, white		8 6		9 3
¾ by 6½ & 7 in. 1st & 2nd yellow		8 3		9 3
,, ,, ,, white		8 0		8 9
¼ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)		9 0		9 9
¼ by 6½ and 7 in. 2nd yellow and white (ditto)		8 0		8
¼ by 6½ and 7 in. 1st yellow and white (ditto)		7 0		7 9
¼ by 6½ and 7 in. 2nd yellow and white (ditto)		6 6		7 3
Narrower widths at 10 per cent. less. 3rd quality at 15 per cent. less than 2nd.				
Danzig and Memel Fir Timber— per load				
Best middling	4	0 0	4	5 0
Good middling and Second	3	7 6	3	15 0
Common middling	3	2 6	3	10 0
Undersized	3	2 6	3	12 0
Swedish and Norwegian Balks	2	12 6	3	0 0
Baltic Oak Timber—				
Danzig and Stettin—Large	4	0 0	5	15 0
Small	3	7 6	4	5 0
Quebec Timber per load				
Yellow Pine	4	17 6	6	10 0
Oak	4	7 6	6	10 0
Elm	4	0 0	4	5 0
Ash	3	5 0	4	0 0
Birch	3	7 6	5	15 0
New Brunswick, &c., Birch	3	5 0	4	0 0
American Pitch Pine Timber	3	12 6	4	17 6
Wainscot, per log, 12 cubic ft.—				
Crown (Eng. & Dutch) } nominal	3	15 0	5	0 0
Brack } nominal	3	2 6	4	0 0
Lathwood, per cubic fathom—				
Petersburg	4	0 0	6	10 0
Riga and Danzig	4	10 0	5	10 0
Norway Poles, per ft. run	0	0 1	0	0 1½
Oak Staves, per mille full size pipe				
Memel, Crown	220	0 0	230	0 0
Brack	190	0 0	200	0 0
Danzig	165	0 0	175	0 0
Bosnia, single Barrel (nominal)	28	0 0	30	0 0
United States, Pipe	37	10 0	45	0 0
Hogshead, extra heavy and double extra	30	0 0	35	0 0
Indian Teake .....per load	11	10 0	16	5 0
British Guiana Greenheart	0	0 0	8	0 0
Mahogany, per foot superficial—				
Honduras, cargo average	0	0 4½	0	0 5½
Nicaragua, do.	0	0 4½	0	0 5½
Tabasco, do.	0	0 4½	0	0 6
Mexican, do.	0	0 4	0	0 4½
Panama, do.	0	0 3½	0	0 4
African, do.	0	0 3½	0	0 5
Cuba, do	0	0 6	0	0 8
St. Domingo, do.	0	0 5	0	0 7½
Do. Curls (good to prime)	0	0 9	0	1 3
Walnut, American (logs)	0	3 0	0	5 0
Do. do. (planks and boards)	0	5 0	0	7 6
Italian, per foot superficial	0	0 3	0	0 7½
Black Sea, per ton	6	0 0	12	0 0
Satin Walnut (logs) per foot cube	0	1 0	0	1 6
,, (planks and boards)	0	1 9	0	3 0
Sequoia (Californian redwood), per foot cube	0	1 9	0	2 0
Whitewood, American (logs)	0	1 4	0	1 9
,, ,, (planks and boards)	0	1 9	0	2 9
Quartered oak ,, ,,	0	2 3	0	4 0
Kauri pine (logs)	0	1 9	0	2 0
,, ,, (planks)	0	2 3	0	2 9
Jarrah (planks)	0	2 0	0	2 3
Lancewood spars each, fresh and large	0	5 0	0	7 0
Lancewood spars, ordinary to fair	0	3 0	0	4 0
Degame spars	0	8 0	0	10 0

METALS.

IRON—Pig, in Scotland ..... ton	3 10 1½		0 0 0	
Bar, Welsh, in London	9 0 0		9 15 0	
Do. do. at works in Wales	8 10 0		9 0 0	
Do. Staffordshire, in London	9 15 0		11 15 0	
COPPER British cake and ingot	77 0 0		73 10 0	
Best selected	77 10 0		78 11 0	
Sheets, strong	86 0 0		87 0 0	
Chili bars	73 10 0		73 15 0	
YELLOW METAL .....lb.	6½d.		7d.	
LEAD—Pig				
Spanish .....ton	17 0 0		0 0 0	
English Com. Brands	17 7 6		0 0 0	
Sheet, English, 6 lbs. per sq. ft. and upwards	18 17 6		0 0 0	
Pipe	19 7 6		0 0 0	
White Lead	26 0 0		0 0 0	
ZINC—				
Vieille Montagne ..... ton	28 15 0		0 0 0	
Silesian	28 5 0		0 0 0	
Spelter	21 15 0		0 0 0	
TIN—Straits	143 0 0		0 0 0	
Australian	145 0 0		0 0 0	
English Ingots	148 0 0		0 0 0	
Banca	0 0 0		0 0 0	
Billiton	0 0 0		0 0 0	

ENGLISH SHEET GLASS IN CRATES.

1 oz. thirds	2½d. per ft. delivered.
,, fourths	2d. ,, ,,
21 oz. thirds	3d. ,, ,,
,, ,, fourths	2½d. ,, ,,
26 oz. thirds	4d. ,, ,,
,, ,, fourths	3½d. ,, ,,
32 oz. thirds	5d. ,, ,,
,, ,, fourths	4½d. ,, ,,
Fluted sheet, 15 oz.	2½d. ,, ,,
,, ,, 21 ,,	3½d. ,, ,,

PRICES CURRENT (*Continued*).

OILS, &c.

	£	s. d.	£	s. d.
Raw Linseed Oil in pipes, per ton	36	0 0	0	0 0
,, ,, ,, in drums, per gal.	0	3 0	0	0 0
Boiled ,, ,, in pipes, per ton	38	0 0	0	0 0
,, ,, ,, in drums, per gal.	0	3 2	0	0 0
TAR—Stockholm.....barrel	1	6 6	0	0 0
Archangel	1	0 0	0	0 0
Turpentine, in barrels, per cwt.	2	6 0	0	0 0
,, in drums, per gal.	0	3 8	0	0 0
Genuine Ground English White Lead	25	10 0	0	0 0
Red Lead	22	0 0	0	0 0
Best Linseed Oil Putty, per cwt.	0	8 0	0	0 0

VARNISHES, &c.

	per gallon.
Fine Elastic Copal Varnish for outside work	0 16 0
Best Elastic Copal Varnish for outside work	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 0
Best Hard Oak Varnish for inside work	0 10 0
Best Extra Hard Church Oak Varnish for inside work	0 10 0
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 8 0
Brunswick Black	0 8 0
Berlin Black	0 15 6
Knotting	0 9 0
Best French and Brush Polish	0 8 6

BRICKS, &c.

	s. d.				
Hard Stocks	30	0 per thousand alongside, in river.			
Rough Stocks and Grizzles	28	0 ,,	,,	,,	,,
Smooth Bright Facing Stocks	58	0 ,,	,,	,,	,,
Shippers	42	0 ,,	,,	,,	,,
Flettons	29	0 ,,	,,	at railway depôt.	
Red Wire Cuts	34	0 ,,	,,	,,	,,
Best Fareham Red	71	6 ,,	,,	,,	,,
Best Blue Pressed Staffordshire	86	0 ,,	,,	,,	,,
Best Stourbridge Fire Bricks	84	0 ,,	,,	,,	,,
Best White Glazed Stretchers	260	0 ,,	,,	,,	,,
Headers	240	0 ,,	,,	,,	,,
Quoins and Bull-nose	340	0 ,,	,,	,,	,,
Double Headers	320	0 ,,	,,	,,	,,
Best Dipped Salt Glazed Stretchers and Headers	240	0 ,,	,,	,,	,,
Quoins and Bull-nose	280	0 ,,	,,	,,	,,
Double Headers	230	0 per thousand at railway depôt.			
Seconds Quality White and Dipped Salt Glazed	40	0 per thousand less than best.			
Thames and Pit Sand	7	0 per yard, delivered			
Thames Ballast	6	6 ,, ,,			
Best Portland Cement	35	0 per ton ,,			
Best Ground Blue Lias Lime	23	0 ,, ,,			

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. od. per yard, delivered.
Stourbridge Fire-clay in sacks, 31s. 6d. per ton at rly. dpt.

STONE.

	s. d.			
Ancaster in blocks	2	0 per ft. cube, deld. rly. depôt		
Bath ,, ...	1	7 ,, ,,		
Beer ,, ...	1	6½ ,, ,,		
Grinshill ,, ...	1	10 ,, ,,		
Brown Portland in blocks	2	2 ,, ,,		
Dacley Dale ,,	2	1½ ,, ,,		
Red Corsehill ,,	2	5 ,, ,,		
Red Mansfield ,,	2	4½ ,, ,,		
Hard York ,,	2	10 ,, ,,		
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	7	per ft. super at rly. depôt.	
,, ,, 6 in. Rubbed Ditto	2	10½	,,	,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1	3	,,	,,
,, ,, 3 in. self-faced Ditto	0	9	,,	,,

SLATES.

in. in.	£	s. d.	
20×10 best blue Bangor	11	5 0	per 1000 of 1200 at ry. dep.
,, best seconds ,,	10	15 0	,, ,,
16×8 best ,,	6	2 6	,, ,,
20×10 best blue Portmadoc	10	18 0	,, ,,
16×8 ,, ,,	6	0 0	,, ,,
20×10 best Eureka unfading green	11	2 6	,, ,,
16×8 ,, ,,	6	15 0	,, ,,
20×10 Permanent green and Sedan green	10	0 0	,, ,,
16×8 ,, ,,	5	12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	41	0 per 1,000 at rly. depôt.
Hip and valley tiles	3	7 per doz. ,, ,,
Best Broseley tiles	48	0 per 1,000 ,, ,,
Hip and valley tiles	4	0 per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6 per 1,000 ,, ,,
Do. ornamental Do.	60	0 ,, ,, ,,
Hip tiles	4	0 per doz. ,, ,,
Valley tiles	3	9 ,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	50	9 per 1,000 ,, ,,
Hip tiles	4	1 per doz. ,, ,,
Valley tiles	3	8 ,, ,, ,,

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

BRIDLINGTON QUAY.—For stables, &c., west side Wycliffe-lane, for Messrs. Oxtoby & Holtby. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay:—

E. Corner	£305 10	E. Wilson, Bridlington Quay*	£280 3
W. Barnes	299 19		

CHATHAM.—For the supply of road materials, for the Corporation. Mr. Chas. Day, Borough Surveyor, Town Hall, Chatham:—

Thomas Apps, Capston:

400 yds., Capston-road, surface flints	£0	3	9
100 ,, Beacon-road, ,, ,,	0	4	9

Kent Road Maintenance Company, Gravesend:

300 yds., Luton Church, quartzite	0	13	1
200 ,, Hills-terrace, ,,	0	13	1
400 ,, Maidstone-road, ,,	0	13	1
200 ,, New-road, ,,	0	13	1

Fry Bros., Deptford:

300 yds., Dock-road, Guernsey granite	0	12	3
1,000 ,, Military-road, ,, ,,	0	11	10
300 tons, Luton-road ,, ,,	0	12	8

Kent Road Maintenance Company, Gravesend:

100 tons granite headers	1	12	6

CHELMSFORD.—For new house at S. Hanningfield, Essex, for Mr. T. R. Coverdale. Messrs. Clare & Ross, architects, 66, Duke-street, Chelmsford, and 1, West-street, Finsbury-circus, E.C.:—

J. Wilding, Shenfield* .....£500.

CHELMSFORD.—For new show-room, Springfield-road, built in Clare's Patent Fireproof Construction for Messrs. Wray & Fuller. Messrs. Clare & Ross, architects, 66, Duke-street, Chelmsford, and 1, West-street, Finsbury-circus, E.C.:—

Choat & Son, Chelmsford*..£146 after amendment.

DARTFORD.—For the erection of school for 500 boys, with caretaker's house and boundary walls, &c., York-road, East Hill, Dartford, for the School Board. Mr. Henry Hall, architect, 19, Doughty-street, W.C. Quantities by Mr. S. G. Thacker, 9, Southampton-row, W.C.

E. Lawrence & Sons	£10,973	J. Smith	£9,489
Multon & Wallis	10,490	Lonsdale	9,100
West Brothers	10,190	Gough & Co., Hendon†	8,734
Martin Wells & Co.	9,868		
Geo. Wallis	9,784		

EAST SHEEN.—For alterations, additions, and repairs to Park Cottage, East Sheen, for Sir Frederick Wigan, Bart. Messrs. Higgs & Rudkin, architects, 25, John-street, Bedford-row, W.C. Quantities by Mr. Alan Paull, 6, Quality-court, Chancery-lane, W.C.:—

Gregory & Co.	£3,152	H. Roffey	£2,988 1 7
Parsons & Co.	3,098	Macey & Sons*	2,849 0 0
Parfitt & Co.	3,097		

HERTFORD.—For levelling, metalling, &c., Elton and other roads, for the Corporation. Mr. J. H. Jevons, C.E., Town Hall, Hertford:—

Wilkinson Bros.	£1,500	J. Jackson	£1,343 12 6
J. Brown	1,495	A. T. Catley	1,281 5 4
R. A. Bonnett	1,474	G. F. Tomlinson, Derby*	1,254 2 7
J. Truman	1,429 2 7		

LEICESTER.—For alterations to premises, Belvoir and Albion streets, for Mr. Wm. Stanyon. Messrs. Tait & Herbert, architects, Friar-lane:—

Contract No. 1.

J. O. Jewsbury* £4,149 0 0

Contract No. 2.

S. Russell & Sons* £341 12 2

Contract No. 3.

Norman & Underwood* £309 0 0

Contract No. 4.

A. Shaw* £142 8 6

[All of Leicester.]

[*See also page 531.*

CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Electricity Plant, &c.	Leeds Corporation	H. Dickinson, Civil Engineer, 1, Whitehall-road, Leeds	May 28
Road Works, Resolven, Wales	Messrs. Cory Brothers, Limited	J. L. Smith, Architect, Aberdare	do.
Fifty Houses, Resolven	do.	do.	do.
Additions to Schools, Thornley, Durham	.....	Rev. R. Marsh, Old Vicarage, Tow Law, Durham	do.
Additions to Car Sheds	Sheffield Corporation	C. F. Wike, Civil Engineer, Town Hall, Sheffield	do.
Surveyor's Materials	East Grinstead U.D.C.	R. Wilde, Surveyor, Council's Offices	do.
Cottage, Bassaleg, Mon.	Great Western Railway Company	G. K. Mills, Paddington Station, W.	May 29
Mortuary, &c.	Bexley U.D.C.	W. T. Howse, Surveyor, Public Offices	do.
Sewers, &c.	Stanley (Durham) U.D.C.	J. Routledge, Surveyor, Council Offices, Stanley	do.
Hospital	Bexley U.D.C.	W. T. Howse, Surveyor, Public Offices, Bexley Heath	do.
Schools, Princess-street, Bridlington	The Trustees	S. Dyer, Architect, Bridlington	do.
Brick Gasholder Tank	Radcliffe Gas Company	T. Newbigging & Son, Engineers, Norfolk-street, Manchester	do.
Cast-iron Water Pipes, Millhall	Grangemouth (N.B.) Police Comrs.	A. & W. Black, Civil Engineers, Falkirk	do.
Street Works, Argyle-street South	Birkenhead Corporation	C. Brownridge, Civil Engineer, Town Hall	do.
Granite Road Metal, Goole	Reedness Drainage Commissioners	G. England, Bank Chambers, Goole	do.
Street Works, Middletown	Skipton U.D.C.	J. Mallinson, Surveyor, Town Hall	do.
Road Works, Thynne-street	West Bromwich Corporation	A. D. Greatorex, Civil Engineer, West Bromwich	do.
*Making-up and Paving Elmdale-street	Fulham Vestry	Surveyor, Town Hall, Walham Green, S.W.	May 30
Shops, Fforchaman-road, Cwmaman, Aberdare	.....	T. Roderick, Architect, 23, Clifton-street, Aberdare	do.
Business Premises	Blaenavon Co-op. Society, Limited	W. Bryant, Old Town Hall, Blaenavon	do.
Two Villas, Aberavon	Mr. M. Tennant	F. B. Smith, Architect, Port Talbot	do.
Alterations to Crown Inn, Leeds-road, Dewsbury	Messrs. J. Tetley & Son, Limited	F. W. Ridgway, Architect, Bond-street, Dewsbury	do.
Cottage, Ditchampton	Wilton U.D.C.	H. J. King, Russell-street, Wilton	do.
Reading Room, &c., Distington, Cumberland	.....	T. Wilson, Architect, Distington	do.
Stables, Blakeley Lodge, &c.	Burton-upon-Trent Corporation	G. T. Lynam, Borough Engineer, Burton	May 31
Rebuilding Panteg Hotel, Aber, Caerphilly	Crosswells' Cardiff Brewery Co. Ld.	A. O. Evans, Architect, Pontypridd	do.
Paving Works, Cavendish-avenue	Withington (Lancs.) U.D.C.	A. H. Mountain, Civil Engineer, Town Hall	do.
Paving Cowper and Other Streets	Luton Town Council	Borough Surveyor, Town Hall	do.
*Wood Paving Works, &c.	St. George-in-the-East Vestry	Surveyor, Vesty Hall, Cable-street, E.	do.
*Cleaning and Painting Stations, &c.	Midland Railway	See Advertisement	June 1
*Accumulator House, Mint-street	do.	do.	do.
*Portland Cement	Brighton County Council	Borough Engineer, Town Hall, Brighton	do.
Stabling, &c., Green Bat	Alnwick U.D.C.	G. Wilson, Surveyor, Council Offices	do.
Lodge, Brinny Glebe, Upton, co. Cork	.....	Rev. R. F. Clarke, Upton, co. Cork	June 2
Farm Buildings, Sealebank, Dalton-in-Furness	Duke of Buccleuch	Wadham & Son, Architects, 6, Cornwallis-street, Barrow	do.
Residence, Swansfield Park-road, Alnwick	Mr. D. Fairgrieve	G. Reavell, jun., Architect, Alnwick	do.
Church, Longshaw, Blackburn	.....	Stones & Stones, Architects, 10, Richmond-terrace, Blackburn	June 3
Sewers, Mill Fleet	King's Lynn Corporation	E. J. Silcock, Civil Engineer, Town Hall	June 4
Road Works, &c.	Branksome (Dorset) U.D.C.	S. J. Newman, Surveyor, 3, Tennyson-buildings, Branksome	June 5
Chapel and Schools, Blythe, near Retford	.....	Eyre & Southall, Architects, Chapel Gate, Retford	do.
*Materials, &c.	Ealing U.D.C.	C. Jones, Public Buildings, Ealing, W.	do.
*Schools, &c.	Beckingham School Board	Eyre & Southall, Chapel Gate, Retford	do.
Broken Flints (1,000 tons)	Littlehampton U.D.C.	A. Shelley, Town Offices, Littlehampton	June 6
Fire Station, Albert-road	Blackpool Corporation	T. Loftus, Town Hall	do.
Rebuilding Arch, &c., Ashley Green	Bucks. County Council	R. J. Thomas, Surveyor, County Hall, Aylesbury	do.
Pier Head Works, Cork Customs Quay	Office of Works	H. Williams, Office of Public Works, Dublin	do.
Electric Lighting Station, Northgate	Bridgwater Town Council	W. T. Baker, King-square, Bridgwater	do.
Electricity Plant	do.	W. T. Baker, Town Hall, Bridgwater	June 7
Asphalting Footpaths	Leadgate (Durham) U.D.C.	T. S. Longstaff, Surveyor, Leadgate	do.
*Alterations to Fire Station, &c.	Ealing U.D.C.	Engineer, Public Buildings, Ealing, W.	do.
*Painting, &c.	Fulham Guardians	D. Matthews, Architect, 650, Fulham-road, S.W.	do.
Pavilion, Knightstone	Weston-super-Mare U.D.C.	Surveyor, Town Hall	June 9
New Road	Bolsover U.D.C.	W. H. Wagstaffe, Civil Engineer, 57, Saltergate, Chesterfield	do.
Renovation of Church, Tullyallen, Ireland	.....	J. Brown, Architect, 41, Kilmorey-street, Newry	do.
*Forming Paths, &c., Leavesden Asylum	Metropolitan Asylums Board	Offices, Embankment, E.C.	June 11
*Retort House, Iron Roof, Joists, &c.	Ramsgate Gas and Water Com.	W. A. McIntosh Valon, Gas Offices, Ramsgate	do.
Coastguard Station, Castletownbere, co. Cork	Office of Works	H. Williams, Office of Public Works, Dublin	do.
*Painting and Repairs to Schools	Wanstead School Board	See Advertisement	do.
*Sewerage Works	Itchen U.D.C.	F. Wentworth-Shields, Engr., 1, Cranbury-road, Southampton	do.
Belfry and Spire, St. Eugene's Church, Derry	.....	Ashlin & Toye, Architects, 7, Dawson-street, Dublin	June 12
*Infant's School & Central Hall, Northumberland Heath	Erith School Board	Ford, Son, & Burrows, Architects, 21, Aldermanbury, E.C.	do.
*Repair of Tar and Asphalte Paving	Tottenham U.D.C.	P. E. Murphy, Engineer, 712, High-road, Tottenham	do.
*Sanitary Work at Workhouse, Kingsland-road	Shoreditch Guardians	F. J. Smith, Parliament Mansions, Victoria-street, S.W.	June 13
*New Turkish Baths, and Alterations to Existing Baths	Warrington Council	Borough Engineer, Town Hall, Warrington	do.
*Pumping Station, Machinery, &c.	Much Wenlock Sanitary Com.	See Advertisement	June 14
*Coastguard Buildings at Cromer	Admiralty	See Advertisement	June 15
Engine House, &c., St. Mary's-road	Luton Town Council	G. Bell, Town Hall, Luton	June 18
*Making-up Roads	Acton District Council	D. J. Ebbetts, 242, High-street, Acton	June 19
*Coroner's Court, Mortuary, and Disinfecting Station	Plumstead Vestry	Engineer, Vestry Offices, Maxey-road, Plumstead	June 20
*Ruislip Sewerage (Contract No. 1)	Uxbridge R.D.C.	Bailey, Denton, Son, & Lawford, Palace Chambers, Westminster	June 22
*Ruislip Sewerage (Contract No. 2)	do.	do.	do.
*Painting, Colouring, &c.	War Department	Royal Engineer Office, North Aldershot	No date
*Male Able-bodied Block at Workhouse	St. Marylebone Guardians	A. Saxon Snell, Architect, 22, Southampton-bldgs., Chancery-lane	do.
House, Melford, near Welshpool	.....	Bremner & Bremner, Architects, Oswestry	do.
Additions to Store Premises, Pleasley, Notts.	Co-operative Society, Limited	W. Dodsley, Architect, 14, Stockwell Gate, Mansfield	do.
Two Pairs Cottages, Antony Estate, Torpoint, Devon	General Pole-Carew, C.B.	W. J. Carder, Architect, 8, Athenæum-street, Plymouth	do.
Additions to Wellington House, near Derby	.....	E. R. Ridgway, Architect, Long Eaton, near Nottingham	do.
Semi-detached Residences, Worthy-road, Winchester	.....	G. A. Barnard, Architect, Moor Court, City-road, Winchester	do.
Twenty-four Cottages, Raynes Park, Surrey	.....	G. Pearson, Architect, 58, Moorgate-street, E.C.	do.
Restoration of Spire of Parish Church, Sandhurst	.....	Colonel Harvey, Ambarrow, Sandhurst	do.
Buildings, Market-street	Aberdeen Steam Trawling Co.	Brown & Watt, Architects, 17, Union-terrace, Aberdeen	do.
Two Houses, Bassett-road, Camborne	.....	Mr. Moffat, Market-square, Camborne	do.
Wooden Bridge, Mills Hill	Chadderton (Lancs.) U.D.C.	W. Eckersley, Surveyor, Council's Offices, Chadderton	do.
Foundry Works, Guide Bridge, Manchester	Planet Foundry Company, Ltd.	Potts, Son, & Henning, Architects, 34, Victoria-bldgs., Manchester	do.
House, Stabling, &c., Hookergate-lane, Durham	.....	J. Lawson, 35, Park-terrace, Swalwell	do.
Rebuilding the White Hart Hotel, Sedbergh	Messrs. Whitwell & Co., Limited	J. Hutton, Architect, Kendal	do.
Six Cottages, New Southgate	.....	Tompkins & Barker, 29, Adelaide-road, Brockley	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Architectural Draughtsmen (2)	Plymouth Corporation	3*l.* per week	June 2
*District Superintendent	St. Marylebone Vestry	150*l.* per annum	June 6
*County Bridgemaster	Lancashire County Council	600*l.* per annum	June 25
*Engineering Assistant	Sheffield Corporation	.....	No date

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p. —. Contracts, pp. iv. vi. viii. x. & xxiii. Public Appointments, pp. xx. & xxiii.*

CLAYTON-LE-MOORS.—For the execution of sewering, levelling, &c., works, for the Urban District Council. Mr. Arthur Dodgeon, Surveyor, Council Offices, Clayton-le-Moors :—

	Section I.	Section II.	Section III.	Section IV.	Section V.	Section VI.	Section VII.	Section VIII.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Dewhirst & Hindle, Blackburn	£37 10 0	—	—	—	—	79 18 7	66 11 2	106 18 1
Chadwick Brothers, Blackburn	131 5 0*	14 19 2*	140 1 3*	131 1 7*	57 18 10*	78 15 0*	66 0 1	110 9 11
Exors. A. Broadley, Clayton-le-Moors	143 15 0	17 4 4	161 17 10	141 17 4	61 0 0	85 0 8	66 5 10*	110 5 9

LEOMINSTER.—For the construction of a storage reservoir (200,000 gallons) for the Corporation. Mr. Jas. Budd, C.E., Town Hall, Leominster :—

J. Preece	£1,637 9 1	B. Firth	£1,462 17 11½
J. Watkins	1,474 15 3	A. James, Bromyard*	1,397 10 6

LONDON.—For wood paving, &c., certain roads, for the Hampstead Vestry. Mr. C. H. Lowe, C.E., Vestry Hall, Hampstead, N.W. :—

Wm. Griffiths, Jarrah, per square yard	£0 14 3
creosoted deal, per square yard	0 13 4
Acme "Wood Paving Company, Jarrah, per square yard	0 13 11
Improved Wood Paving Company, Queen Victoria-street, E.C., Jarrah, per square yard‡	0 13 2
Improved Wood Paving Company, Queen Victoria-street, E.C., creosoted deal, per square yard‡	0 12 3

‡ Accepted, provided a loan for the amount is sanctioned.

LONDON. — For Church Hall, All Saints', Notting Hill, London, W. Mr. E. Hodgson Fowler, architect, Durham. Quantities by Messrs. C. John Mann & Son, 29, Great George-street, Westminster, S.W. :—

	Estimate No. 1.	Estimate No. 2.
Thos. Willson	£2,370	£258
S. F. Halliday	2,202	255
J. W. Heeps	2,108	243
Wm. Gibson	2,100	215
Bowman & Sons	2,089	212
Foster Bros.	2,080	215
J. Christie	2,020	310
Chas. Ansell	2,020	202
Chessum & Sons	1,999	221
Spiers & Son	1,990	206
F. T. Chinchen	1,998	215
John Appleby	1,990	210
Nicks & Co.	1,981	219
F. H. Coleman	1,947	197
W. Pearce	1,946	215
S. Polden	1,945	231
Godson & Sons	1,850	204
C. W. King, Limited	1,740	190

LONDON.—For alterations and repairs at No. 2, Alexander-mews, Westbourne-grove, W., for Mr. Francis F. Guana. Mr. H. Fuller Clark, architect :—

Selway & Sons	£194	Burton & Son	£130
Hayward & Son	167		

LONDON.—For painting, distempering, and whitewashing, &c., the interior, and repairing, painting, and pointing the exterior, of the whole of the building and casual wards at the St. Olave's Union Infirmary, Rotherhithe, for the Guardians of the Poor. Messrs. Newman & Newman, architects and surveyors, 31, Tooley-street, London Bridge, S.E. :—

Balaam Bros.	£3,300 0	Reason	£2,840 0
Vigor	3,242 0	E. Mills	2,812 0
Richards	3,209 0	Sutton & Styles, Herne Hill*	2,775 10
Hall Bros.	3,197 0		
Inns	2,875 0		

LONDON.—For the erection of three dwelling-houses and shops, Langhedge-road, Tottenham, N., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E. :—

G. Chapman*	£1,550

LONDON.—For the erection of engineering workshops in Clarence-road, Hackney. Quantities by Mr. W. Batting :—

J. Pavey	£2,698	Hibberd Bros.	£2,285
R. Ridgeway & Sons	2,450	W. Shurmer	2,160
J. J. Weibking	2,420	Elkington & Co.	2,122
Mutton & Wallis	2,364	J. O. Richardson	2,100
Watts, Johnson, & Co.	2,322	Perry Bros.	2,097
		W. Antill & Co.	1,885

NEWTON ABBOT.—For additions to the boys' school, Highweek, for the Highweek School Board. Messrs. J. W. Rowell & Son, architects, of Newton Abbot. Quantities by Mr. Vincent Cattermole Brown, of Paignton :—

F. A. Stacey	£669 0 0	J. Edwards	£582 2 11
R. F. Yeo	610 0 0	G. Hicks, Newton Abbot*	530 0 0
L. Bearne	599 17 6		

RAUNDS.—For works of electric lighting at Mr. R. Coggins' factory, Raunds, Northamptonshire. Messrs. Mosley and Scrivener, architects, Northampton :—

F. G. Brown	£370 11 0	Whitmy Smith	£307 5 0
W. Mansell	346 10 0	V. Duckenfield	280 17 0
Lea & Warren	344 10 6	Electric Wiring Co.*	237 8 4
Adkins & Co.	341 10 0		
Whitfield & Blackburn	311 17 0		

RAUNDS.—For works of engineering at Mr. R. Coggin's factory at Raunds, Northants. Messrs. Mosley & Scrivener, architects, Northampton :—

Lea & Warren	£405 3 6	Mather & Son	£329 13 6
B. Turnell	380 10 0	Robinson & Co.	315 10 9
J. T. Lowke	366 2 5	E. Whitfield*	287 3 9

SUDBURY (Suffolk).—For additions to St. Gregory and St. Peter's schools. Mr. W. M. Fawcett, architect, Cambridge :—

Scales & Robins	£1,350	Grimwood & Sons, Sudbury*	£1,049
Alf. Howard	1,295		

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following list of tenders. Mr. T. J. Bailey is the Board's Architect :—

ALBION-SQUARE BATHS.—Providing and fixing new boiler, hot-water pipes and fittings, and other engineer's work, including all cutting away and making good :—

Cannon & Sons	£949	J. Grundy	£825
Brightside Foundry and Engineering Co., Ltd.	875	Duffield & Son	795
J. & F. May	850	J. Esson	768
		Wenham & Waters, Ltd.*	680

COLLINGWOOD-STREET.—Improvements :—

Boys' Department.—Providing new hall, average 39 ft. by 23 ft.

Girls' Department.—Providing new hall, average 39 ft. by 23 ft.

Infants' Department.—Providing new hall, teachers' room, stock-room, lavatory, and cloak-room, altering existing cloak-room, and re-lighting babies' room. Accommodation unaltered.

General.—Enclosing, draining, and tar-paving additional land for boys' playground, and providing new covered playground for boys :—

Wall & Co.	£3,615	Leslie & Co., Ltd.	£3,273
Treasure & Son	3,403	Miskin & Sons	3,265
Staines & Son	3,332	F. & F. J. Wood	3,128
Clarke & Bracey	3,278	Chessum & Sons*	3,072

CREEK-ROAD.—Replacing the present flitched beams carrying floor of boys' class-rooms, A and B, with steel joists. Painting exterior of school, &c. Enlarging washhouse, building coal-house, extending scullery, providing two new windows, Tobin tubes, &c., to the school-keeper's apartments :—

C. Foreman	£597 0	Thomas & Edge	£445 0
H. Groves	498 0	E. Proctor*	395 0
S. Musgrove	497 12		

DEPTFORD PARK.—Refitting offices all departments; re-fitting Infants' and Girls' lavatories, and providing new drainage scheme; altering existing entrance to Infants' offices so that they are outside covered playground; forming separate urinal for Boys' and Infant Boys' departments, instead of as originally in front of the offices :—

W. Downs	£3,176	G. Parker	£2,800
Edwards & Medway	3,000	J. & C. Bowyer	2,724
W. V. Goad	2,900	Falkner & Sons*	2,473

DIVISIONAL OFFICES, MORNING-LANE.—Providing and fixing two stock cupboards :—

Spencer & Co.	£70 14	Hammer & Co., Ltd.	£59 10
Lascelles & Co.	62 10	H. Bouneau*	55 10

Repairs to Buildings on the Schedule of Prices.

FINSBURY.—Group 3.

F. Britton	+33⅓	per cent. on Schedule.
McCormick & Sons	+33⅓	,, ,,
J. W. Dixon	+30	,, ,,
Stevens Bros.	+27½	,, ,,
W. Hornett	+25	,, ,,
*C. & W. Hunnings	+22½	,, ,,

HONEYWELL-ROAD—(Enlargement).—Extending existing low-pressure hot-water apparatus to four class-rooms in enlargement, and re-arranging existing apparatus in six class-rooms and corridors :—

G. Davis	£495	The Brightside Foundry and Engineering Co., Ltd.	£275
G. & E. Bradley	325	Dawson & Co., Ltd.	263
J. & F. May	325	Seward & Co.	249
J. Esson	310	Knight & Sons	232
J. Grundy	308	Wenham & Waters, Ltd.*	196
Duffield & Son	280		

HUGON-ROAD.—(Enlargement)—Extending existing low-pressure hot-water apparatus to six new cloak-rooms, and to three corridors on ground, first and second floors :—

Cannon & Sons	£94 0	Vaughan & Brown, Ltd.	£72 0
Morris & Co.	83 0	Stevens & Sons	71 0
G. Davis	80 0	Palowkar & Sons	64 15
Knight & Sons	79 0	G. & E. Bradley*	59 0

KENNINGTON-ROAD.—(Enlargement)—Extending existing low-pressure hot-water apparatus to nine class-rooms, cloak-rooms, and corridors :—

Kite & Co.	£250 0	Comyn, Ching & Co.	£197 17
Cannon & Sons	249 10	Vaughan & Brown, Ltd.	187 0
G. Davis	248 0	Duffield & Son	170 0
Wenham & Waters, Ltd.	220 0	Turner & Co.	157 10
J. & F. May	208 0	G. & E. Bradley	145 10
Wippell Bros. & Row	200 0	Dougill & Co., Ltd.*	144 0

KILBURN-LANE.—Underpinning school-keeper's house, &c. :—

G. H. Sealey	£165 0	G. Neal	£75 0
W. Hammond	132 0	F. T. Chinchen*	54 15
W. R. & A. Hide	116 15		
Thompson & Beveridge	85 0		

MANSFIELD-ROAD NEW SCHOOL—Accommodation:—Boys, 258; girls, 258; infants, 258: total 774. Graded school on three stories. Halls—boys, 55 ft. by 32 ft.; girls, 54 ft. 4½ in. by 31 ft. 7½ in.; infants, 54 ft. by 31 ft. 3 in. Class-rooms—boys, 60, 60, 56, 40, 42; girls, 60, 60, 56, 40, 42; infants, 60, 60, 56, 40, 40. Special rooms—drawing class-room, 1,050 ft. area. Heating by open fires and stoves. Total area of site, 54,450 sq. ft. Playground area per child—boys, about 78 sq. ft.; girls and infants, about 30 ft. The plans also include a schoolkeeper's house :—

		†
Chessum & Sons	£23,143	+ £155
Allen & Sons	23,002	+ 172
T. L. Green	22,850	+ 152
Scrivener & Co.	22,670	+ 158
Grover & Son	22,585	+ 140
Leslie & Co., Ltd.	22,502	+ 160
Williams & Son	22,490	+ 295
Gough & Co.	22,392	+ 300
Treasure & Son	22,260	+ 177
C. Cox	22,011	+ 270
Miskin & Sons	21,704	+ 190
E. Lawrance & Sons*	21,654	+ 143

† If walls of class-rooms and halls are plastered add.

MILLBANK.—New School—Accommodation—Boys, 258; girls, 258; infants, 278; total, 794. Graded School, boys' and girls'. Separate buildings for infants. Hall—Boys, about 1,680 sq. ft.; girls, 1,680 sq. ft.; infants, 1,830 sq. ft. Classrooms—Boys, 60, 60, 42, 48, and 48; girls, 60, 60, 42, 48, 48; infants, 60, 60, 60, 50, 48. Special rooms—Drawing Classroom, 1,056 sq. ft. Heating by low-pressure hot-water apparatus. Manual training centre for twenty boys, with power of extension to forty :—

Johnson & Co., Ltd.	£29,759 0 0	†	£335
Wallis & Sons	29,129 0 0	+	314
Spencer, Santo, & Co., Ltd.	28,470 0 0	+	220
T. L. Green	28,273 0 0	+	362
C. Wall	28,250 0 0	+	230
Scrivener & Co.	27,875 0 0	+	373
Grover & Son	27,850 0 0	+	390
Miskin & Sons	27,602 0 0	+	350
J. & M. Patrick	27,133 0 0	+	293
C. Cox	27,085 0 0	+	289
Martin Wells & Co.	27,085 0 0	+	230
Holloway Bros.	26,872 0 0	+	265
Lawrance & Sons	26,783 0 0	+	350
Treasure & Son	26,239 12 4	+	281
Simpson & Son*	26,105 0 0	+	266

† If walls of class-rooms and halls are plastered, add.

MORNING-LANE.—Removing the defective pans in boys' and female infants' range of offices, and refitting them with separate pans, and providing connexions with the existing drainage :—

G. Foxley	£400 0 0	Stevens Bros	£303 10 0
Johnson & Co.	353 0 0	McCormick & Sons	298 0 0
J. T. Robey	325 0 0	F. Bull	289 0 0
Marchant & Hirst	320 15 0	Bruce, Croom, & Co.*	224 9 6
Barrett & Power	304 0 0		

OFFORD-ROAD—(P. T. Centre).—Providing and fixing complete low-pressure hot-water apparatus—To hall and four class-rooms, lavatories, and cloak-rooms (ground floor). Gymnasium, four class-rooms, and dressing-room, lavatories and cloak-rooms (first floor). Laboratories, lecture, modelling, and drawing class-rooms (second floor) :—

Cannon & Sons	£730
J. Grundy	616
Wippell Bros. & Row	575
Wontner-Smith, Gray, & Co.	570
Williams & Sons Ltd. (Cardiff)	549
J. & F. May	545
Oldroyd & Co., Ltd.	543
Turner & Co.	505
The Brightside Foundry and Engineering Co., Ltd.	475
Duffield & Son	467
Defries & Sons, Ltd.*	448

SOUTHAMPTON-STREET.—Refitting girls' offices with separate pans, and providing connexions to existing drainage :—

G. Parker	£329	Rice & Son	£287
Lathey Bros.	306	Falkner & Sons	283
Maxwell Bros., Ltd.	305	Edwards & Medway*	245
H. Line	300		

TENNYSON-STREET (Junior Mixed and Special School).—Providing and fixing complete low-pressure hot-water apparatus to two halls, ten class-rooms, corridors, cloak-rooms, and lavatories :—

G. Davis	£670	Wenham & Waters, Ltd.	£414
Harlow & Son	540	Dawson & Co., Ltd.	405
Wippell Bros. & Row	525	Duffield & Son	390
Stevens & Sons	455	The Brightside Foundry and Engineering Co., Ltd.*	365
Wontner-Smith, Gray, & Co.	465		
Knight & Sons	449		
J. Esson	436		

Supply of the following articles on running contracts.

I. Trolleys :—

		4 ft. 6 in. by 2 ft. 5 in.	4 ft. by 2 ft.
H. Bouneau	each	£8 0 0	£7 10 0
Hammer & Co., Limited	,,	7 10 9	7 5 0
Lascelles & Co.	,,	7 3 6	6 14 0
T. Cruwys	,,	7 0 0	6 15 0
London School Furniture Company	,,	6 5 0	5 17 6
Wrinch and Sons*	,,	5 10 0	5 6 0

[*See also next page.*

IV. Trivets, Cinder Sifters, Scraper Gratings, Pots, Shovels (Teachers' and Coal), Fenders, Jack Cranes, and School Pokers :—

Articles.	F. Bird & Co.	Carter & Aynsley, Limited.	Dawes, Betts, & Co.	The Brightside Foundry and Engineering Company, Limited.	Rowland Hodges.	R. H. & J. Pearson, Limited.	Portway & Sons.	Pryke & Palmer.	Wood Bros.	J. Young & Co.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Trivets ..... each	3 0	2 3	—	—	2 10	*2 2	2 6	3 4	—	4 6
Cinder Sifters ..... per doz.	18 6	15 0	30 0	—	13 10	—	*12 0	31 0	—	30 0
Scraper Gratings ..... each	13 0	29 9	26 0	25 0	21 9	16 6	15 0	15 0	*12 10	30 0
Pots ..... ,,	7 11	15 9	—	—	7 11	8 0	—	*7 10	—	12 6
Shovels (Teachers') ..... ,,	1 8	—	—	—	*1 5	—	1 8	1 5½	—	—
,, (Coal, Large) ..... ,,	*1 5	—	—	—	1 11½	1 8½	2 1	1 10	—	—
Fenders (Kitchen) 4 ft. 6 in. long ,,	*9 3	12 9	—	11 6	13 3	—	12 6	11 0	—	—
,, ,, 4 ft. 0 in. ,, ,,	*9 0	12 6	—	11 0	12 9	—	11 6	10 2	—	—
,, ,, 3 ft. 9 in. ,, ,,	*8 9	12 6	—	10 6	12 6	—	11 1	9 8	—	—
,, ,, 3 ft. 6 in. ,, ,,	*8 9	12 6	—	10 0	12 0	—	10 8	9 3	—	—
,, ,, 3 ft. 3 in. ,, ,,	*8 6	12 6	—	9 9	11 9	—	10 2	8 11	—	—
,, ,, 3 ft. 0 in. ,, ,,	*8 6	12 6	—	9 9	11 3	—	9 8	8 6	—	—
Jack Cranes ..... ,,	*1 6	2 3	—	—	2 7	1 10	—	2 2	—	—
Pokers (School) ..... ,,	*0 11½	0 11½	—	—	0 11½	—	1 4½	1 2½	—	—

II. Baize Curtains for dividing rooms :—

	Per ft. super, including fixing, &c. A quality.	B quality.
	s. d.	s. d.
Janes & Son	1 10	1 8
Wallis & Co., Limited	0 9½	0 8
Tidmarsh & Sons	0 9	0 8½
Harriet Evans	0 9	0 8
M. Dowler & Son*	0 8½	0 8

III. Carpenters' Tools :—

	Per doz. sets.		Per doz. sets.
G. Buck	£6 12 0	H. S. Timpson	£4 13
Moseley & Son ..	6 2 0	Nettlefold & Sons ..	4 7
Syer & Co.	5 12 0	Woodcock & Sons* ..	4 4

V. Wheelbarrows :—

	Each.		Each.
Dawes, Betts, & Co.	£1 5 0	Braby & Co., Ltd.	£1 3 6
H. S. Timpson ..	1 4 11	H. & C. Davis & Co. Ltd.*	1 3 3

VI. Bowls for fountains :—

	† £ s. d.	‡ £ s.	§ s. d.
O'Brien, Thomas & Co.	2 8 0	2 8	4 0
Davis & Co., Ltd.	2 6 0	2 8	4 6
Jukes Coulson, Stokes, & Co.	1 16 0	1 18	3 9
R. H. & J. Pearson, Ltd. ...	1 15 6	1 18	3 6
Bird & Co.*	1 12 0	1 13	2 10

† Price for supplying about 500 bowls at per dozen.
‡ Price for supplying bowls which may afterwards be required at per dozen.
§ Price for supplying bowls which may afterwards be required at each.

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T. Cruwys	£1,500	Hawkins & Co.	£1,118
J. & W. T. Hunter ..	1,250	Mitson & Co.*	1,057
W. Harbrow	1,190		

*** In our last issue, in the list of tenders for workmen's dwellings at Brentford, we print the name "C. R. Yurr." It should have been "C. R. Gurr."

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